Health Inequalities in America

BACKGROUND PAPER COMMISSIONED FOR:

THE MEASURE OF AMERICA

American Human Development Report 2008-2009

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I. Health and Human Development

According to the World Health Organization constitution preamble, "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being…" Indeed, it is well accepted that "health is among the most important conditions of human life and a critically significant constituent of human capabilities which we have reason to value" (Sen, 2002 p.660). The first Human Development Report was motivated by the notion that "the basic objective of development is to create an enabling environment for people to enjoy long, healthy, and creative lives" (UNDP 1990 p. 9). The critical importance of health in development has been institutionalised through the Human Development Index wherein health (or more specifically, life-expectancy) is one of the three principle factors comprising *human*, as opposed to *economic*, development.

We may ask, however, what it is about health that we value. Within Sen's capability framework, health can be seen both as a valued end state as well as instrumental to achievement of other valued activities[1]. Few would contest the intrinsic value of health. In fact, there are numerous tales of the lust (and often high price paid) for immortality which attest to the historical significance of this human value across cultural and geographic boundaries.

Value of good hlth, burden of ill health: Similar to the advantages of good health, the burden ill health poses to individuals, families, communities and the state can hardly be disputed. In addition to the physical, the psychological and social aspects of health have considerable implications for our perceived ability to participate as active and productive members of our societies (from the micro family unit to the macro international spheres).

More recognizable perhaps, at least in the academic and policy realm, is the instrumental value of health. Economic interest in health, for example, pertains not only to the influence of the economy on health, but also the effects health has on the economy. The human capital approach highlights this instrumental relationship. In this approach, the value of enhancing health lies with the impact on production capacity. Here, health is seen as a means to an end – specifically an economic end. Investing in the populations' health is justified by the subsequent increases in economic productivity. The reverse is also true as is unfortunately demonstrated by the impact of AIDS on the economies of the most affected countries. (SBS: a good example of how ill health affects growth) At a micro level as well, ill health has always been and continues to be a major reason for poverty. In societies without any social security, illness can both be an immediate drain on individual or family finances as well as a potential compromise of future earnings.

More than just economically, health is instrumental to our capability to achieve various activities. The well-established inter-relationships between health and education or employment attest to the instrumental value of health. Simply put, poor health can compromise physical and cognitive capacity and thereby limit potential achievements. Even if we expand the notion of human development beyond the conventional measures of education and income to factors such as security, dignity, or empowerment, it is not difficult to draw the respective links with health.

In sum, the value of health both intrinsically and instrumentally in expanding our freedoms and choices renders it an elemental aspect of human development. However, how we assess and

[1] If we use Sen's terminology we would refer to *functionings* or beings and doings.

attend to health contributes to development. In the following sections, we will illustrate how the United State's approach to health has impacted and is impacting its human development.

II. Overview of the state of Healthcare and Health in the United States

The United States is a leader in healthcare research and technologies and exceeds all other industrial countries in healthcare spending. There is an impressive amount of innovation in biomedical technology and an equally notable level of profits. However, the population's health is not commensurate with the high expenditures and abundant assets. Indeed, life expectancy in the US is at par if not lower and infant mortality rates higher than that of countries which spend far less on health. This discrepancy suggests inefficiencies in the provision of healthcare and inequalities in its distribution. Moreover, if we broaden our assessment of health to include information on the quality of life and subjective well-being of the US population we reveal an unexpectedly dismal picture. According to a recent UNICEF report, child well-being in the US ranks 20th out of 21 OECD countries[2]. The multi-dimensional nature of information used for this report supports the notion of health as a culmination of physical, social and economic circumstances. In this context, healthcare services are only one part of a larger set of factors contributing to a long and healthy life and the capabilities people have to enjoy the lives that they value. Nevertheless, it is healthcare services which receive the bulk of investment and a disproportionate few who benefit from them. The burden of high healthcare costs, more than half of which are borne by individuals, effectively restrict choices (both at a national and individual level) and potentially compromise other dimensions of well-being.

This section reveals the tremendous assets the United States can boast with respect to healthcare research and technologies and their record-high (and rapidly growing) health expenditures. The structure of healthcare provision is also described alongside enumeration of the uninsured and underinsured populations and an assessment of the quality of care provided. This will then be juxtaposed to the general state of health of the population using common population health indicators (i.e. mortality, life expectancy and morbidities) as well as self-assessed, quality of life variables. The section will conclude with a discussion of the disconcerting disconnect between healthcare inputs (i.e. assets and expenditures) and health outcomes (including factors relaying quality of life). The temporal trends of health and healthcare in addition to the comparative view of how the United States compares with its OECD counterparts will further help contextualize the state of health in the US today.

Healthcare Assets

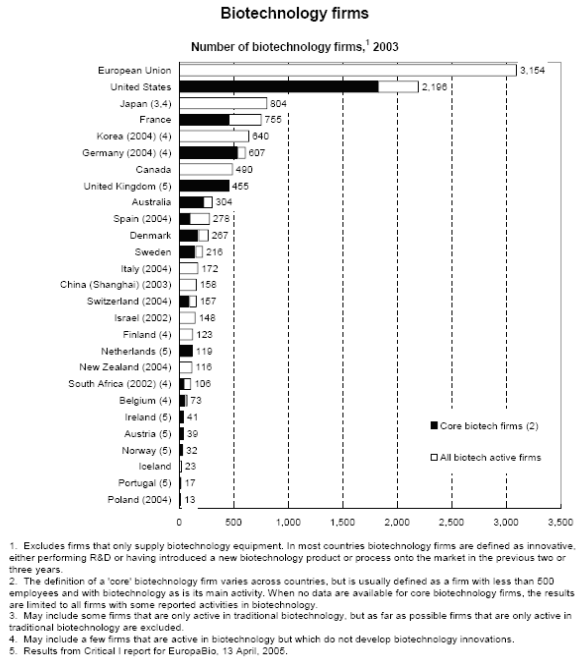
The United States is a clear leader in healthcare assets when compared to other developed countries. The number of biotechnology firms in the US (3,154) far exceed those in other OECD countries (figure 1) and this is accompanied by a correspondingly high level of employees (73,520) and expenditure on biotechnology research and development (2003 PPP $14,232 million) (figures 2 and 3 respectively).

The benefits received from such an investment are equally impressive. In 2001 sales of biotechnology goods and services by US firms was 41% more than total sales by all other reporting countries combined: 2003 PPP$50,472 million verses PPP$35,873 million respectively[3] (figure 4).

[2] UNICEF (2007) *Child Poverty in Perspective: An overview of child well-being in rich countries*. Innocenti Report Card 7.

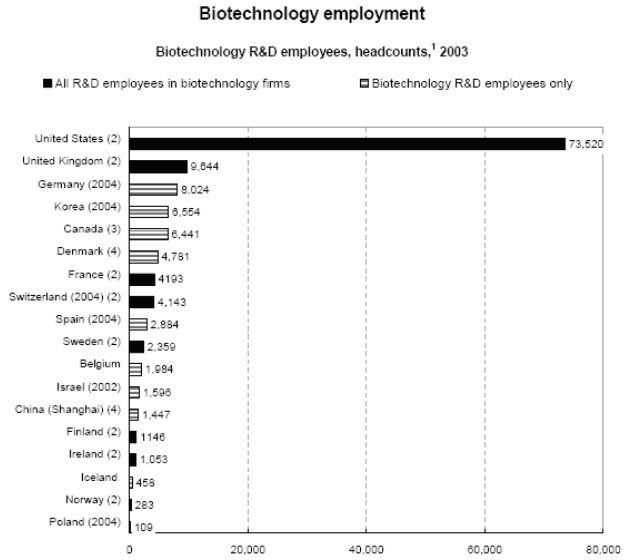
[3] OECD 2006 Biotechnology Statistics

Figure 1:



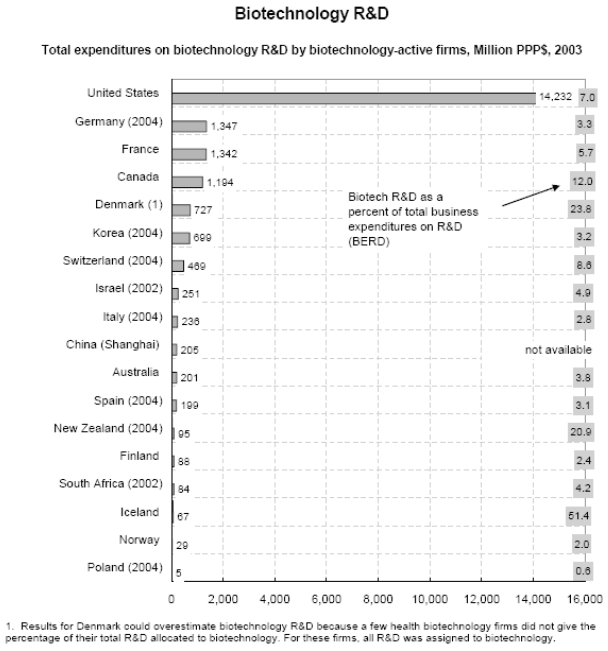
source: OECD Biotechnology Statistics, 2006

Figure 2:



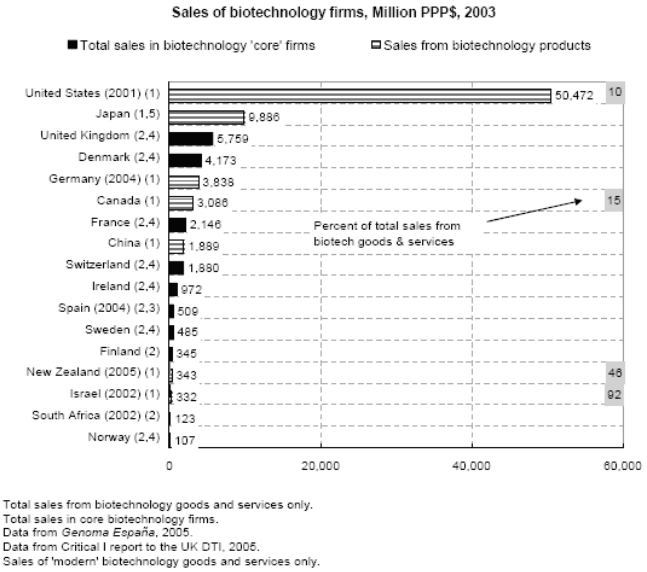
source: OECD Biotechnology Statistics, 2006

Figure 3:



source: OECD Biotechnology Statistics, 2006

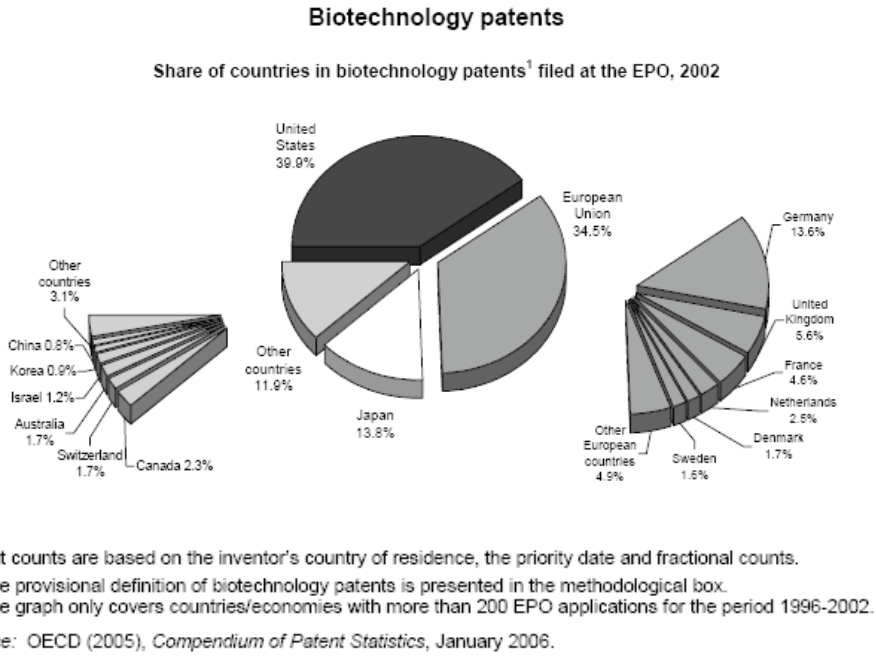
Figure 4:



source: OECD Biotechnology Statistics, 2006

The US is also a leader amongst other industrial countries in biomedical innovation. Patent statistics indicate that the US produces the largest share of biomedical patents (39.9%) explaining, in part, the high level of returns to research and development investments[4] (figure 5).

Figure 5:



Source: OECD Biotechnology Statistics 2006 p.46

With respect to healthcare services, the United States once again comes in the lead in the availability of high-tech medicine. The US has more MRI machines and CT scanners than any other developed country (figure 6 and 7). However, the rate of hospital beds and physicians per population fall below that of its counterparts (figure 8 and 9 respectively).

[4] OECD (2005) *Compendium of Patent Statistics*. Retrieved online (25 March 2007): www.oecd.org/sti/ipr-statistics

Figure 6: MRI Machines, 2004

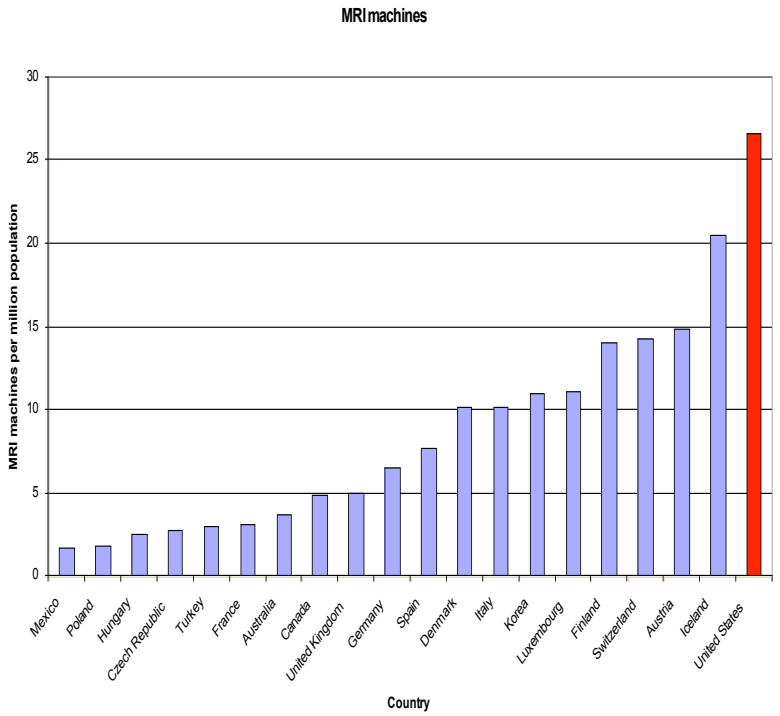


Figure 7: CT Scanners, 2004

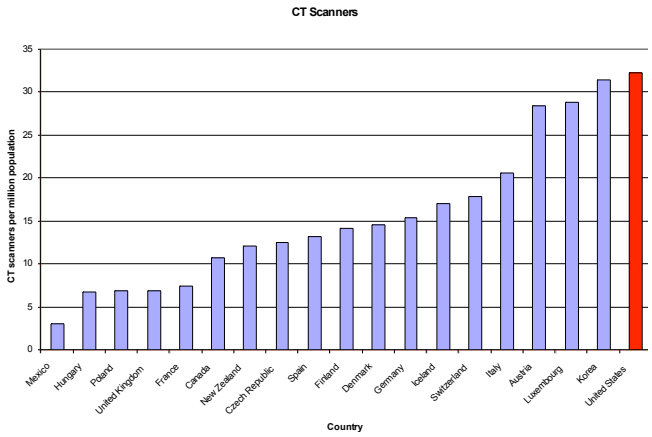


Figure 8: Acute Care Beds, 2004

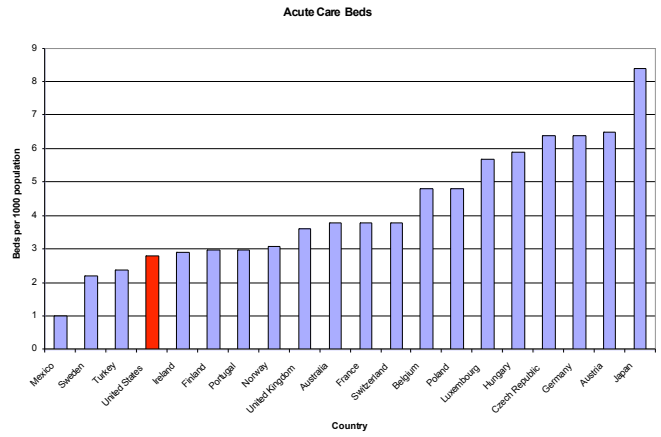
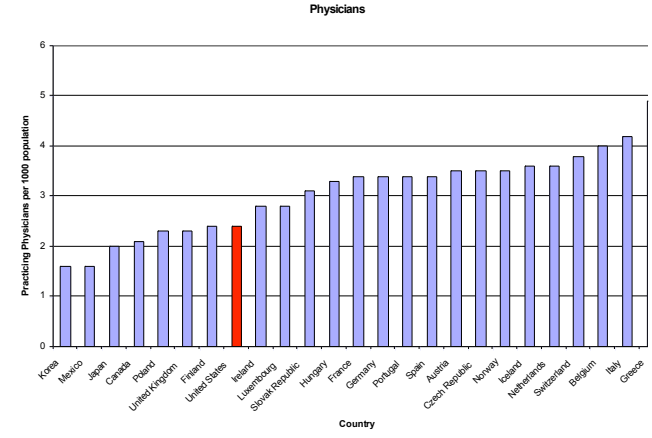


Figure 9: Practicing Physicians, 2004



source: OECD Health Statistics, 2006

In addition, the health industry serves as a major employer for the US population. According to Bureau of Labor Statistics figures, 5.8% of the 2004 US labor force was made up of health professionals working in health service settings, 2.9% were health professionals working in other settings, and 3.1% were non health professionals working in the health service setting[5]. Within

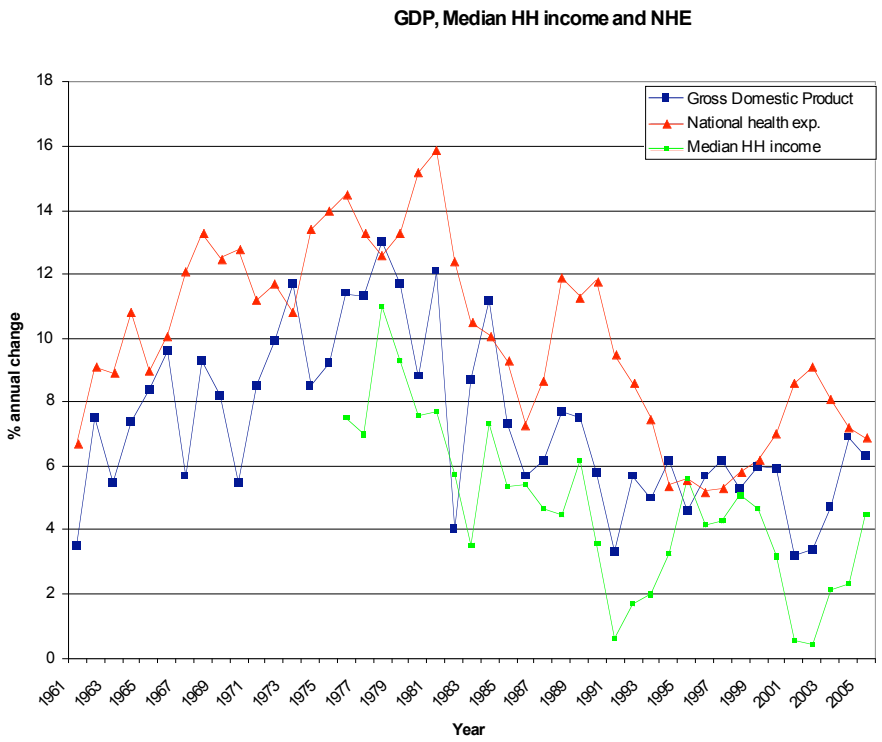
[5] The New York Center for Health Workforce Studies. *The United States Health Workforce Profile*, October 2006. http://chws.albany.edu

the health sector, the largest employer is hospitals (41%), followed by nursing and residential care facilities (21%) and physician offices (16%).

Healthcare Expenditures

The United States spent a remarkable $1,987.7 billion on health in 2005, amounting to $6,697 per capita. More than half this expenditure (54.6%) was private and of the remaining public expenditure, 32.4% was federal and 13% was state. The percent of GDP spent on health has increased from 5.2% in 1960 to a high of 16% in 2005. This rise has out-paced the growth of the US economy in general and workers' earnings in particular resulting in a disproportionate burden on households as well as national and state budgets (Davis et al, 2007) (Figure 10).

Figure 10:

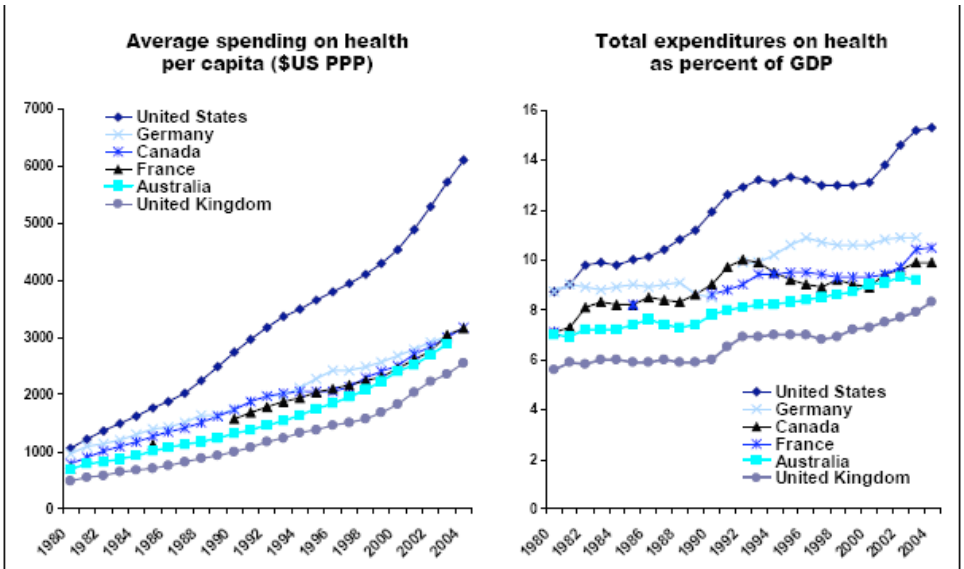


Source: NHE 2005; US Census bureau 2005

From an internationally comparative standpoint, the level of spending on healthcare in the US is far greater than that of its OECD counterparts and the rapid rate of growth in expenditures is exacerbating this gap (figure 11).

Figure 11:

International Comparison of Spending on Health, 1980–2004

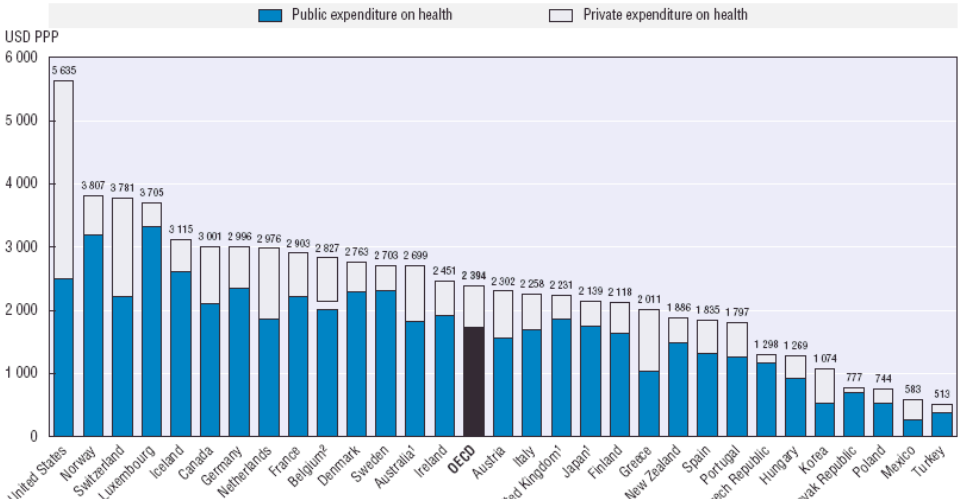


Data: OECD Health Data 2005 and 2006.
Source: Commonwealth Fund National Scorecard on U.S. Health System Performance, 2006.

Healthcare Provision

A distinguishing feature of the US healthcare system is the relative contribution of public and private financing. In the US, unlike other OECD countries, private contributions to per capita health expenditures exceed those from public sources (figure 12).

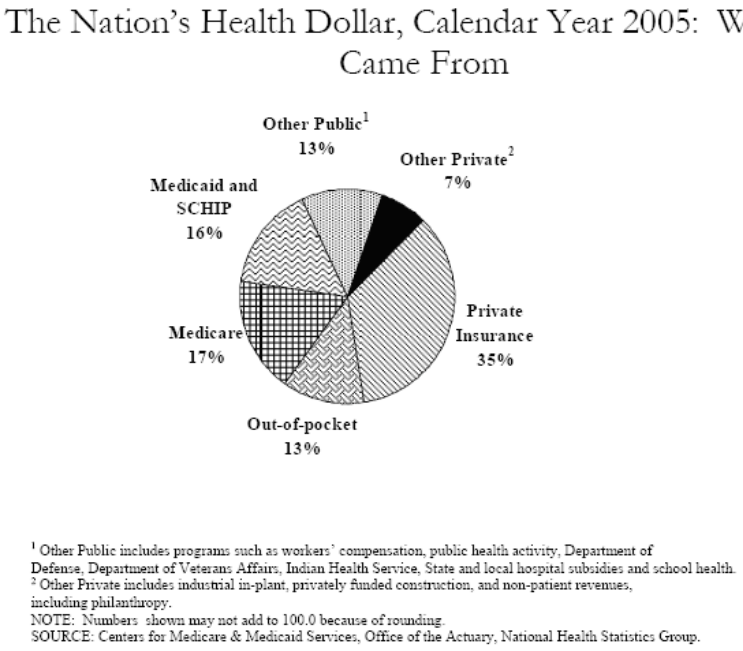
Figure 12: Per Capita Health Expenditures, Public and Private, 2003



Source: OECD, Health at a Glance, 2005.

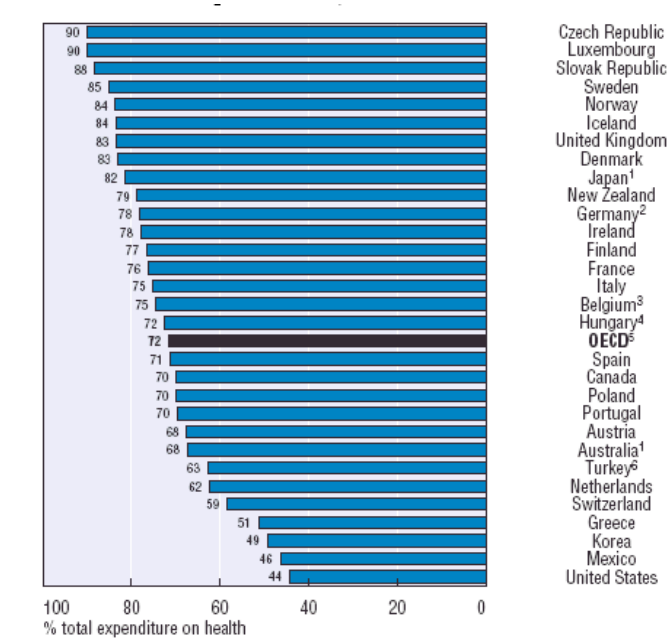
In particular, less than half of current (2005) health expenditures come from public sources, 17% of which is from Medicare and 16% from Medicaid and SCHIP (State Children's Health Insurance Program). Private insurance is the largest contributor to health expenditures (35%) and direct out-of-pocket payments account for 13% (figure 13).

Figure 13:



While the public contribution to health expenditures in the US (44% in 2003) falls well below the OECD average (72% in 2003), private contributions far exceed those of other OECD countries (figures 14-15). Furthermore, while the out-of-pocket contribution (14% in 2003) appears well within OECD norms, the absolute contribution would be higher given the much higher healthcare expenditures in the US compared to its OECD counterparts (14% of 5,635 per capita in 2003).

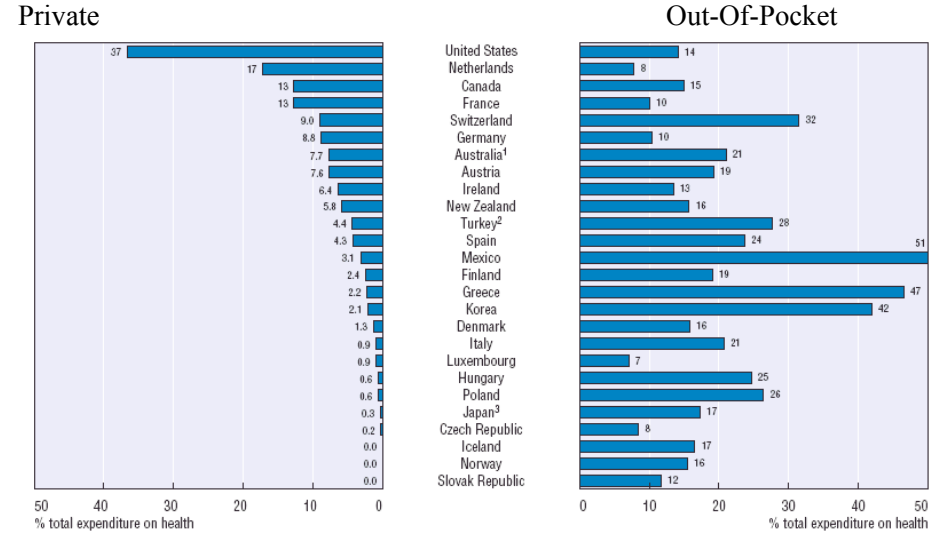
Figure 14: Public Share of Health Expenditures, 2003



1. 2002.
2. 1992.
3. Current health expenditure.
4. 1991.
5. OECD average excludes Belgium and Slovak Republic.
6. 2000.

Source: OECD, Health at a Glance, 2005

Figure 15: Private and Out-Of-Pocket Share of Total Health Expenditures, 2003



1. 2001.
2. 2000.
3. 2002.

Source: OECD Health Data 2005.

Source: OECD, Health at a Glance, 2005

The balance of public and private funding is, however, shifting as an increasing portion of the population become eligible for Medicare services and as Medicare expands to include prescription drug benefits. It is also likely that growing healthcare costs and increasing insurance premiums will lead families with marginal incomes to seek public resources (i.e. Medicaid or other state-sponsored programs) which will in turn further contribute to the shift between private and public funding (Schoenbaum et al 2007, p.5).

Medicare and Medicaid:

Medicare is a federally funded health insurance scheme for Americans aged 65 and over, those under 65 with certain disabilities, as well as individuals with end stage renal disease. Medicare, which contributed $337.9 billion to healthcare expenditures in 2005, covered an estimated 37 million elderly Americans and an additional 7 million with disabilities in 2005[6].

Figure 16:

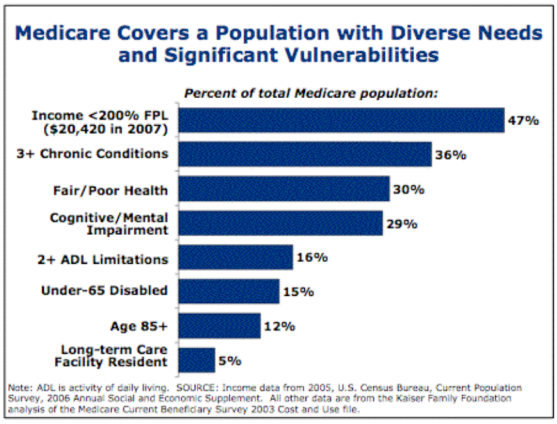
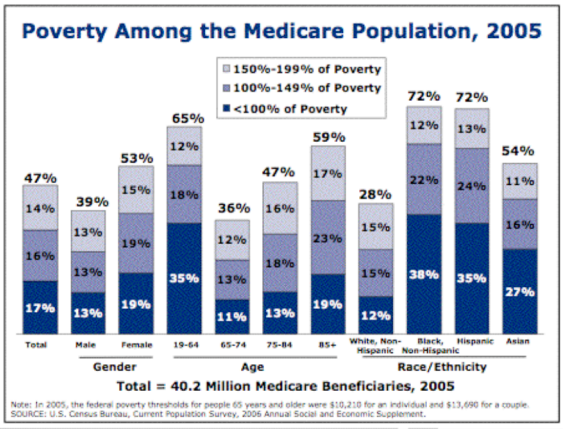


Figure 17:



source: KFF. Medicare: A Primer. 2007

Funded largely through payroll taxes, beneficiaries are eligible for hospital-based inpatient care but have to pay a premium for outpatient services and prescription drug coverage[7]. Despite the coverage rates the degree of coverage still leaves a considerable contribution to be made by the recipient in the form of deductibles and co-payments (table 1).

[6] Kaiser Family Foundation. Medicare: A Primer. 2007.

[7] US Department of Health and Human Services, Centers for Medicare and Medicaid Services: http://www.cms.hhs.gov/MedicareGenInfo/

Table 1:

MEDICARE BENEFITS AND COST-SHARING REQUIREMENTS, 2007

PART A	
Deductible	$992 per benefit period
Inpatient hospital	
Days 1-60	No coinsurance
Days 61-90	$248 per day
Days 91-150	$496 per day
After 150 Days	$496 per day for 60 lifetime reserve days
Skilled nursing facility	
Days 1-20	No coinsurance
Days 21-100	$124 per day
After 100 Days	Not covered
Home Health	No coinsurance;no limit on number of visits;
Hospice	Copayment of up to $5 for outpatient drugs and 5% coinsurance for inpatient respite care
Inpatient psychiatric hospital	Up to 190 days in a lifetime
PART B	
Deductible	$131
Physician and other medical services	
MD accepts assignment	20% coinsurance
MD does not accept assignment	20% coinsurance, plus up to 15% above the Medicare-approved fee
Outpatient hospital care	20% coinsurance
Ambulatory surgical services	20% coinsurance
Diagnostic tests, X-rays, and lab services	20% coinsurance
Durable medical equipment	20% coinsurance
Physical, occupational, and speech therapy	20% coinsurance; benefit limit of $1,780
Clinical diagnostic laboratory services	No coinsurance
Home health care	No coinsurance; no limit on number of visits
Outpatient mental health services	50% coinsurance
One-time "Welcome to Medicare" physical	20% coinsurance
Preventive services	
Flu shots, Pneumococcal vaccines	No coinsurance; one flu shot per flu season limit
Hepitis B vaccine; colorectal and prostate cancer screenings; pap smears; mammograms; abdominal aortic aneurysm (AAA) screenings	Deductible and coinsurance waived for certain preventive services such as colorectal cancer screenings and AAA screenings
Bone mass measurement, diabetes monitoring; glaucoma screening	20% coinsurance
PART D	
Information below applies to the standard Part D benefit design in 2007. Benefits and cost-sharing requirements typically vary across plans. Beneficiaries receiving low-income subsidies pay reduced cost-sharing amounts.	
Deductible	$265
Initial coverage (up to $2,400 in drug costs)	25% coinsurance
Coverage gap or "doughnut hole"	100% coinsurance (no coverage)
Catastrophic coverage (above $3,850 in out-of-pocket spending)	5% coinsurance

Source: KFF (2007). Medicare: A Primer p.17

Medicaid, funded jointly through state and federal resources, is a state administered program that provides healthcare coverage for certain low-income households. Eligibility varies by state and often requires more than just demonstration of income poverty. The predominant focus of Medicaid is for children, their parents, pregnant women, and those with disabilities. In addition, Medicaid supplements Medicare for the low-income elderly population by covering premiums, deductibles, and co-payments as well as services not covered by Medicare. The State Children's Health Insurance Program (SCHIP) was instigated in 1997 as an augmentation of Medicaid to address the growing problem of uninsured children in the US. SCHIP extends coverage to children whose families are ineligible for Medicaid but lack the resources to obtain private

insurance[8]. Single adults or couples with no children, however, are often ineligible for Medicaid despite meeting income poverty criteria (defined as those with household incomes 200% of the poverty level). Consequently, while an estimated 40% of the poor receive Medicaid services, an additional 37% remain uninsured.[9]

Figure 18:

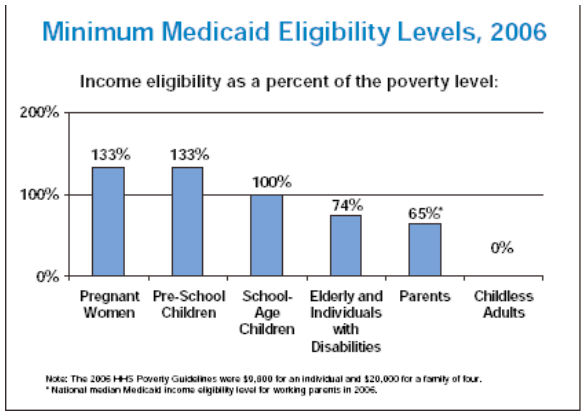
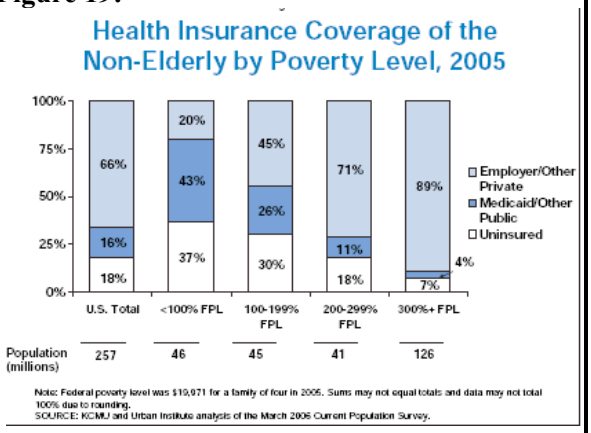


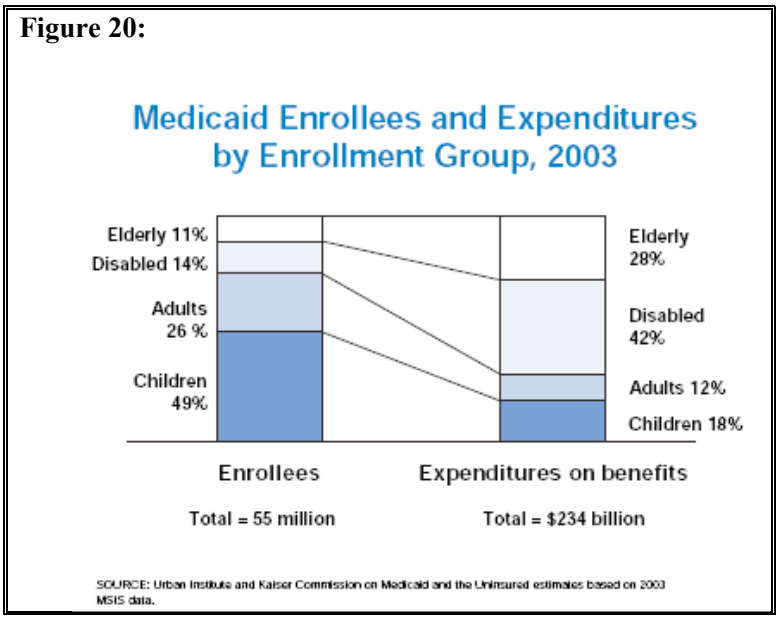
Figure 19:



Source: KFF, Medicaid: A Primer 2007 http://www.kff.org/medicaid/upload/Medicaid-A-Primer-pdf.pdf

With respect to distribution of the resources among beneficiaries, although children account for nearly half of the Medicaid recipients, it is the elderly and disabled enrollees which receive the bulk of expenditures. In general, Medicaid and Medicare recipients have, on average, poorer health than those covered by private insurance which translates into higher expenditures.

Figure 20:



Source: KFF, Medicaid: A Primer 2007 http://www.kff.org/medicaid/upload/Medicaid-A-Primer-pdf.pdf

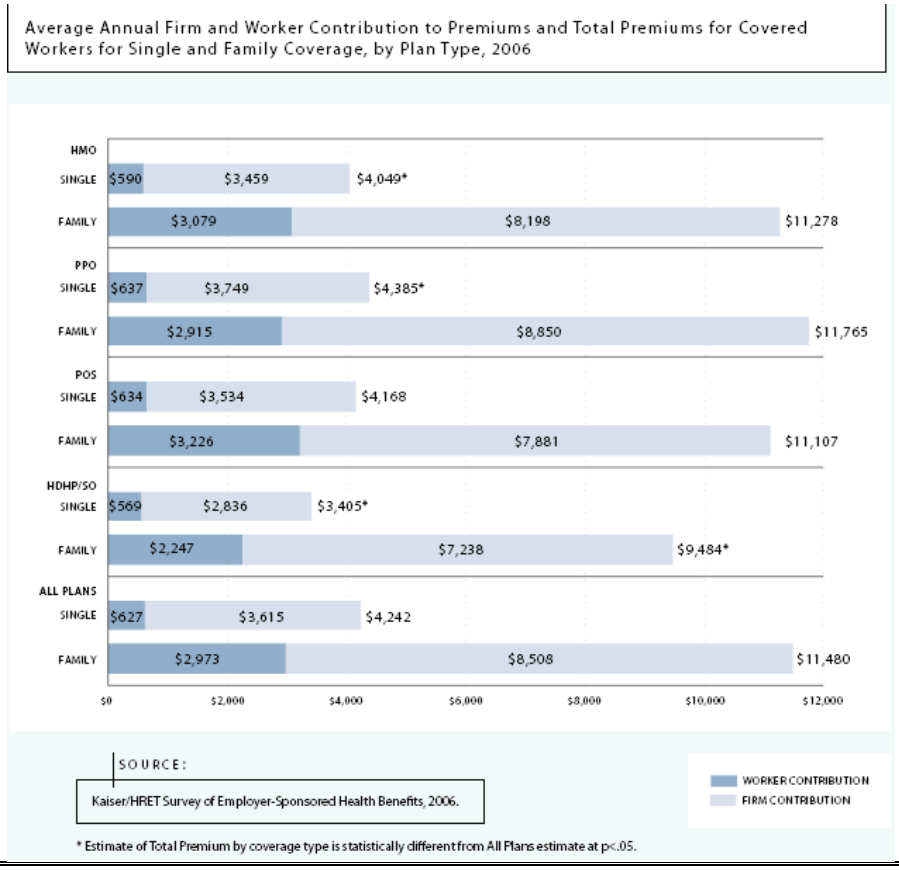
[8] US Department of Health and Human Services, Centers for Medicare and Medicaid Services: http://www.cms.hhs.gov/MedicaidGenInfo/05_SCHIP%20Information.asp

[9] Hoffman, C., D. Rowland and A. Carbaugh. 2004. "Holes in the Health Insurance System – Who Lacks Coverage and Why." The Journal of Law, Medicine and Ethics 390-396

Private Insurance:

The large contribution of private insurance, accounting for $695.7 billion of the health expenditure in 2005, is borne chiefly by US businesses. In 2006, the average cost of premiums was $4,242 per year for each single employee and $11,480 per year for each family. On average across different insurance plans, 85% of single employee and 74% of family premiums are paid by the employer (figure 21). Given that 59% of employees are covered by employer insurance plans, this amounts to a considerable cost to US businesses.

Figure 21:



Source: KFF, Employer Health Benefits 2006 Annual Survey

While the relative contribution to premiums by the covered employee has not changed much over the past eight years (since 1999), ranging from 14%-16% for single coverage and 26%-28% for families, the absolute values have continued to rise (figures 22-23)

Figure 22:

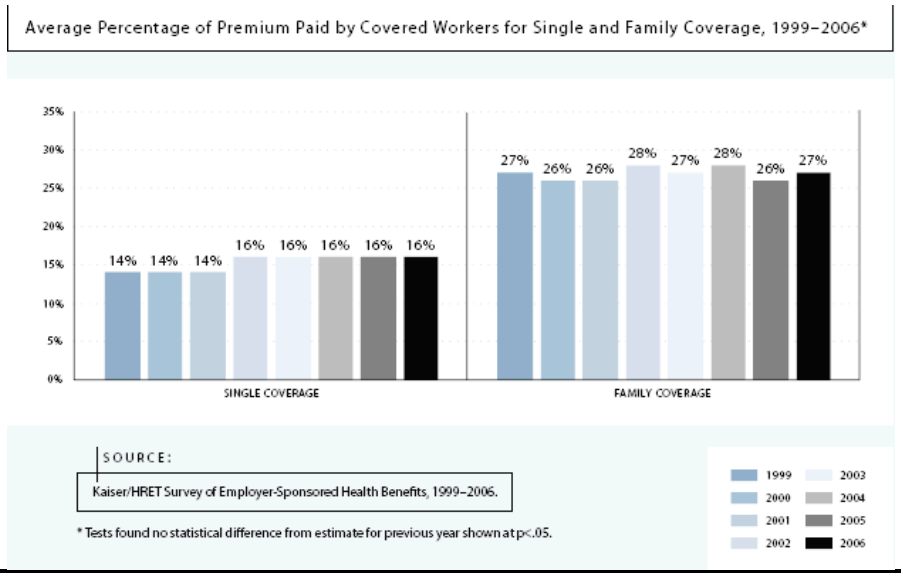
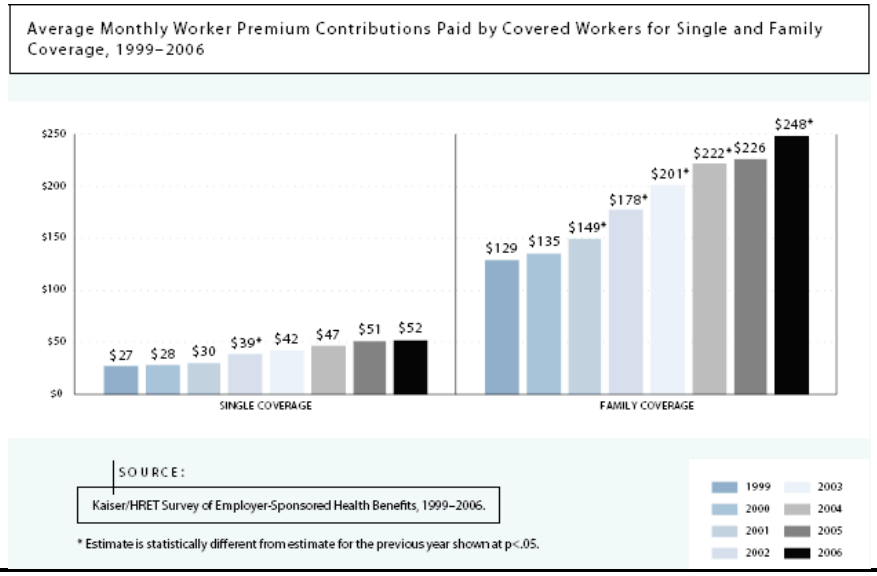


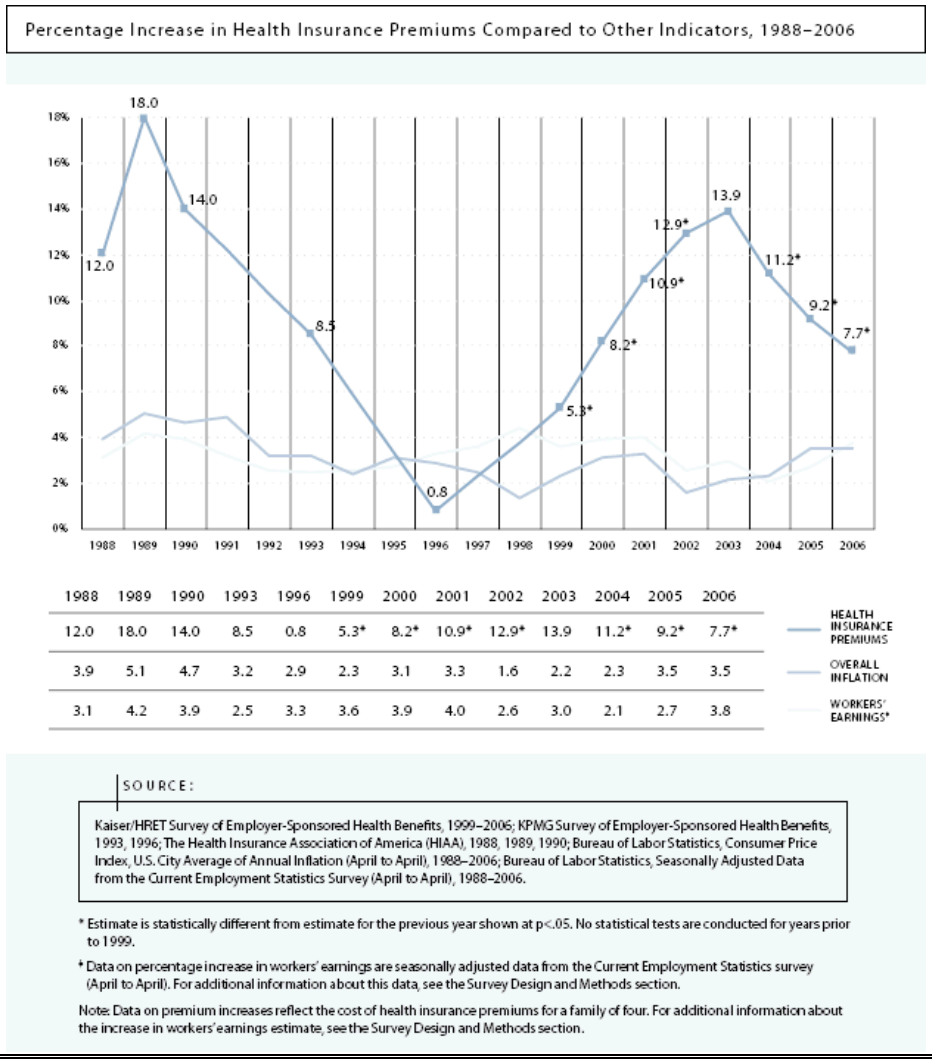
Figure 23:



Source: KFF, Employer Health Benefits 2006 Annual Survey

This is due to the increases in insurance premiums which in turn reflect the growing healthcare costs (figure 24). The growth of the premiums has exceeded growth in inflation as well as worker earnings, increasing 51% for single coverage (from $27 to $52 per month) and 52% for family coverage (from $129 to $248 per month) between 1999 and 2006 (figure 24).

Figure 24:



Source: KFF, Employer Health Benefits 2006 Annual Survey

In addition to increased premiums, growing healthcare costs are also being transmitted to individuals and households by way of decreased employer coverage, particularly in small firms. Overall, there has been a decline in the offer rate of health insurance from 69% in 2000 to 61% in 2005[10]. Smaller firms, those with a higher proportion of lower paid employees (workers who earn $20,000 or less annually) and those with more part-time workers were least likely to offer health insurance and the cost of health insurance was the main reason sited by employers for not offering coverage for their workers[11]. Of the firms that offer health insurance, 80% of employees were eligible for coverage and of those, 83% accepted the coverage offered. This translates into a total of 66% of employees covered by employer health plans in 2005[12]. The main reasons for

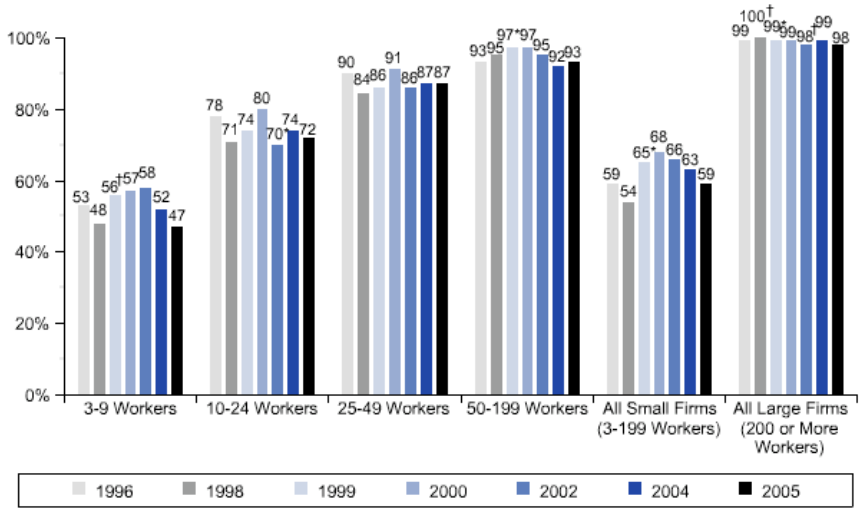
[10] The Kaiser Family Foundation and Health Research and Educational Trust. 2006. Employer Health Benefits 2006 Annual Survey

[11] The Kaiser Family Foundation and Health Research and Educational Trust. 2006. Employer Health Benefits 2006 Annual Survey.

[12] Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2005. From Exhibit 3.2, at http://www.kff.org/insurance/7315/sections/ehbs05-3-2.cfm

employees refusing health insurance when offered were costs (the percentage of the premiums deducted from the employee) and coverage by another source (i.e. other family member).

Figure 25: Percentage of Firms Offering Health Benefits by Firm Size (1996-2005)



*Estimate is statistically different from the previous year shown at p<.05.
†Estimate is statistically different from the previous year shown at p<.10.

Note: The percentage of all large firms (200 or more workers) offering health benefits in 1999 was 99%, not 100% as reported last year. Data prior to 1999 do not reflect several methodological changes that were made to the survey, including standardizing survey weights to U.S. Census data.

Source: Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2005; KPMG Survey of Employer-Sponsored Health Benefits, 1996, 1998. From Exhibit 2.2, at http://www.kff.org/insurance/7315/sections/ehbs05-2-2.cfm.

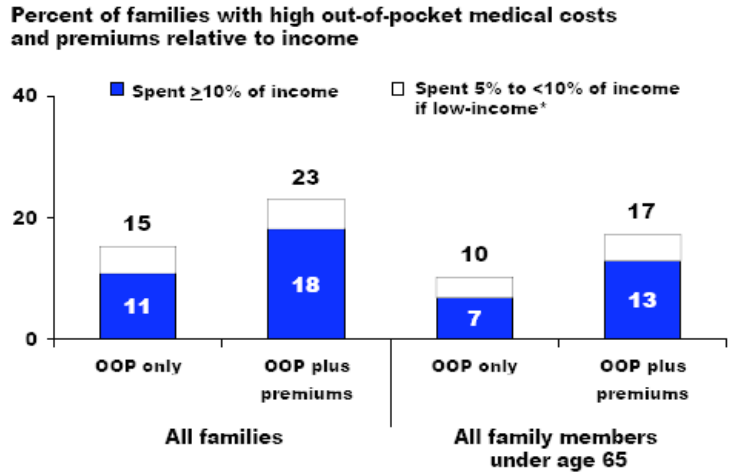
Trends and Indicators in the Changing Health Care Marketplace
Information provided by the Health Care Marketplace Project.
Publication Number: 7031
Information Updated: 04/26/06

Source: KFF, Employer Health Benefits 2006 Annual Survey

Additional Costs

In addition to insurance premiums, direct out-of-pocket payments by households (which include deductibles, co-insurance or co-payments, and expenses not covered by insurance) have increased proportionally to the increases in healthcare spending (Merlis, Gould and Mahato, 2006). This, in combination with increased premiums, has exacerbated the share of household resources devoted to health. Figure 26 demonstrates that between 2000 and 2001, 18% of families had devoted more than 10% of their income to health. This figure increases to nearly 25% if poor families (families with incomes <200% of federal poverty level) who spent more than 5% on health were included (Merlis, Gould and Mahato, 2006 p.ix).

Figure 26:



OOP = out-of-pocket.
* Low-income includes families with incomes <200% of the federal poverty level.
Source: Authors' analysis of data from the Medical Expenditure Panel Survey 2001–02.

Source: Merlis, Gould and Mahato, 2006

By examining the burden of expenditures by insurance coverage, Banthin and Bernard (2006) demonstrate an increase from 1996 to 2003 across all insurance types. As of 2003, more than one-fifth (21.1%) of Americans with private, non-employment based insurance, 10.7% of those with public insurance, 8.8% of those with no insurance, and 5.5% of those with employment-based coverage had health expenditures that exceeded 20% of their disposable income.

Table 2: Family Out-of-Pocket Burdens by Insurance Status Among the Nonelderly Population, 1996 and 2003*

Insurance Status†	No.	Population (× 1000)	Disposable Family Income, $ (SE)‡	Out-of-Pocket Premiums for Private Insurance, $ (SE)‡	Out-of-Pocket Expenditures on Health Care Services, $ (SE)‡	Persons With Total Family Burden, % (SE)§		Persons With Family Health Care Services Burden, % (SE)‖	
						>10% of Disposable Income	>20% of Disposable Income	>10% of Disposable Income (Underinsured¶)	>20% of Disposable Income
Total US population									
1996	19 022	234 856	42 610 (672)	1102 (28)	939 (24)	15.8 (0.5)	5.5 (0.3)	6.7 (0.3)	3.1 (0.2)
2003	28 970	253 905	45 264 (583)#	1296 (32)#	1180 (26)#	19.2 (0.5)#	7.3 (0.3)#	8.5 (0.2)#	4.3 (0.1)#
Private employment-related insurance									
1996	11 922	159 697	50 563 (714)	1316 (30)	1023 (26)	14.2 (0.6)	3.8 (0.3)	4.3 (0.3)	1.4 (0.1)
2003	15 555	168 786	55 070 (666)#	1644 (39)#	1286 (29)#	18.2 (0.6)#	5.5 (0.3)#	5.5 (0.3)#	2.1 (0.1)#
Private nongroup insurance									
1996	819	11 010	45 154 (1931)	3410 (180)	1522 (164)	50.0 (3.0)	19.8 (2.2)	12.7 (2.1)	6.3 (1.6)
2003	838	9842	48 826 (2170)	3650 (192)	1658 (130)	53.4 (2.9)	21.1 (2.2)	12.9 (1.8)	5.8 (0.9)
Public insurance									
1996	3141	30 071	17 646 (709)	144 (16)	464 (36)	15.1 (1.2)	8.3 (0.8)	12.5 (1.1)	7.5 (0.7)
2003	7471	39 446#	19 883 (600)#	189 (16)#	834 (66)#	19.4 (0.9)#	10.7 (0.7)#	16.7 (0.8)#	9.8 (0.6)
No coverage									
1996	3140	34 078	26 545 (1030)	202 (42)	777 (66)	12.7 (0.9)	6.7 (0.7)	11.2 (0.9)	6.2 (0.6)
2003	5106	35 831	26 035 (776)	231 (22)	930 (80)	14.5 (0.8)	8.8 (0.6)#	12.6 (0.7)	7.8 (0.5)

*Data were calculated using Medical Expenditure Panel Surveys (MEPS) data. Standard errors were adjusted to account for the complex design of the MEPS.
†Insurance status is based on monthly indicators and reflects coverage for the entire calendar year. Persons with multiple coverage were assigned the coverage with the longest duration. Premiums for those with public insurance and no coverage reflect private coverage held for part of the year and/or private coverage for other family members.
‡All amounts are in 2003 US dollars.
§Total burden includes out-of-pocket premiums for private insurance and expenditures on health care services.
‖Health care services burden includes out-of-pocket expenditures on health care services.
¶Underinsured status applies to those with private employment-related, private nongroup, or public insurance.
#Difference between 1996 and 2003 is statistically significant at $P \leq .05$.

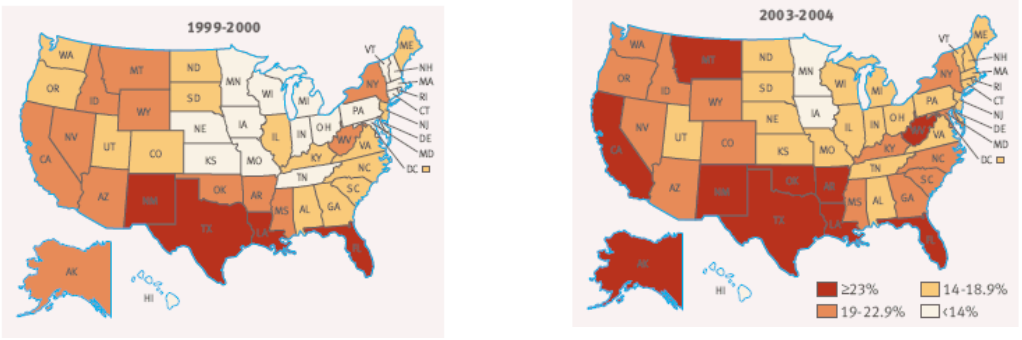
Source: Banthin & Bernard (2006). *Changes in Financial Burden for Healthcare*. JAMA (296). Table 1.

Uninsured and Underinsured

Given rapidly mounting healthcare costs and the gaps between private coverage and eligibility for public support, it is not surprising that a large and growing portion of Americans are uninsured. As of 2005 15.9% of the population, 46.6 million Americans, were without health insurance[13]. According to the Institute of Medicine, an estimated 18,000 American lives and between $65-130 billion in productivity are lost every year as a consequence[14].

Of the uninsured, the large majority are those between the ages of 18 and 64, many of whom are working[15]. According to the Commonwealth Fund Biennial Health Insurance Survey,[16] the increasing numbers of uninsured in America are accounted for by moderate and middle income families. This is due, in part, to increased part-time, temporary or contract employment (referred to as 'non-standard jobs') as well as decreases in the provision of health insurance by employers[17]. Less than half (40%) of non-standard employees were offered insurance by their employers and of those, just over half (54%) accepted.

Figure 27: Percentage of people 18-64 without insurance by US state



Source: Karin Davis. *Uninsured in America: Problems and Possible Solutions*. BMJ 334 (2007) p.347.

In addition to the uninsured, there are an increasing number of Americans who can be considered 'underinsured'. According to a recent study by Schoen and colleagues (2005), underinsurance was indicated when: either medical expenses accounted for 10% or more of income, or 5% of income for adults with incomes at 200% of federal poverty level, or health plan deductibles which alone exceeded 5% of income[18]. According to this definition, it was estimated that 12% of the insured population, were underinsured in 2003. The underinsured had less benefits and paid higher deductibles and co-payments than their fully insured counterparts.

What is perhaps most alarming is that a majority of the underinsured were low-income employees. Of the underinsured, an estimated 73% had incomes equal to or less than 200% of

[13] *U.S. Census Bureau, Housing and Household Economic Statistics Division,* http://www.census.gov/hhes/www/hlthins/hlthin05/hlth05asc.html

[14] Davis, Karen. 2007. "Uninsured in America: Problems and Possible Solutions." British Medical Journal 334: 346-348.

[15] Davis, K. 2007. "Uninsured in America: problems and possible solutions." British Medical Journal 334: 346-348

[16] "…a nationally representative survey of 4,350 adults age 19 and older, presents new information on the health insurance coverage of Americans and the health and financial consequences families face when they experience breaks in insurance. The survey, conducted between August 2005 and January 2006" (p.vii) Collins, Sara R., Karin Davis, Michelle M. Doty, Jennifer L. Kriss, and Alyssa L. Holmgren. *Gaps in Health Insurance: An all American Problem*. April 2006.

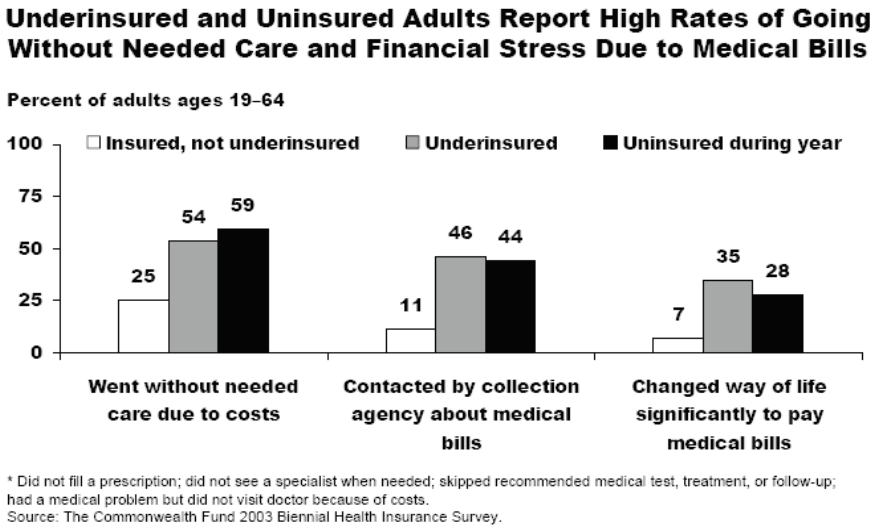
[17] Ditsler, E., P. Fisher, and C. Gordon. 2005. "On the Fringe: The Substandard Benefits of Workers in Part-Time, Temporary, and Contract Jobs." The Commonwealth Fund Publication #879.

[18] Schoen, C., M. Doty, S. Collins, A. Holmgren. 2005. "Insured but not protected: How many adults are underinsured." Health Affairs 24: 272-285.

the federal poverty level[19]. Furthermore, Americans with chronic diseases or those who reported fair or poor health were more likely to be underinsured or uninsured for all or part of the year[20]. It would appear therefore, that those with more need were least protected.

It is not surprising that those who are uninsured or underinsured are less likely to access medical services, fill prescriptions, or follow-up on medical problems and more likely to experience financial difficulties as a result of medical bills. In the Commonwealth Fund study, Schoen and colleagues estimated that as of 2003 35% of Americans aged 19 to 64 were either uninsured for all or part of the year or were underinsured. Furthermore, 59% of the uninsured and 54% of the underinsured failed to access care when needed, while 44% of the uninsured and 46% of the underinsured reported being contacted by a collection agency regarding their medical bills.

Figure 28:



Source: Schoen et al 2005

Distribution of Healthcare Dollars

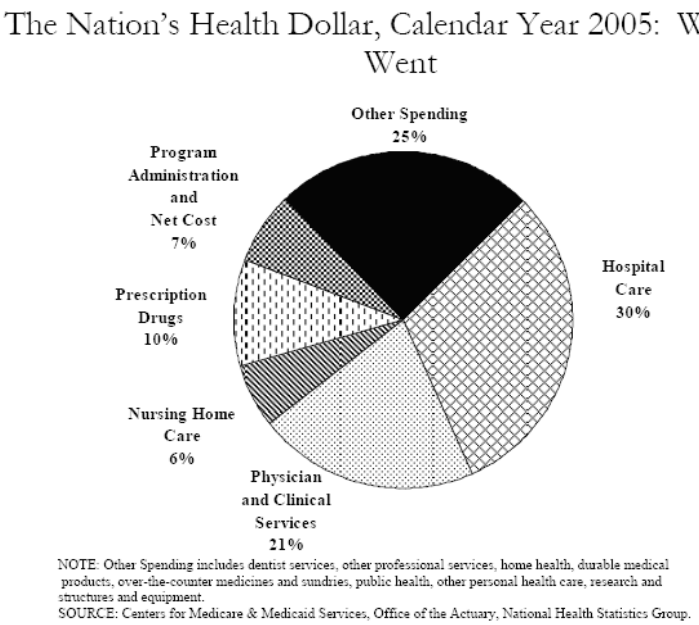
With respect to how the money is spent, nearly one-third of the health expenditure is directed to hospital care (30%) and just over one-fifth for Physician and clinical services (21%) (Figure 29). Together, these account for $1,013.7 billion which is over half the health spending in the US. A large contribution to the increasing costs of healthcare in recent years has been due to inflated administrative overhead costs of private health insurance as well as pharmaceutical prices[21].

[19] Schoen, C., M. Doty, S. Collins, A. Holmgren. 2005. "Insured but not protected: How many adults are underinsured." Health Affairs 24: 272-285

[20] Schoen, C., M. Doty, S. Collins, A. Holmgren. 2005. "Insured but not protected: How many adults are underinsured." Health Affairs 24: 272-285

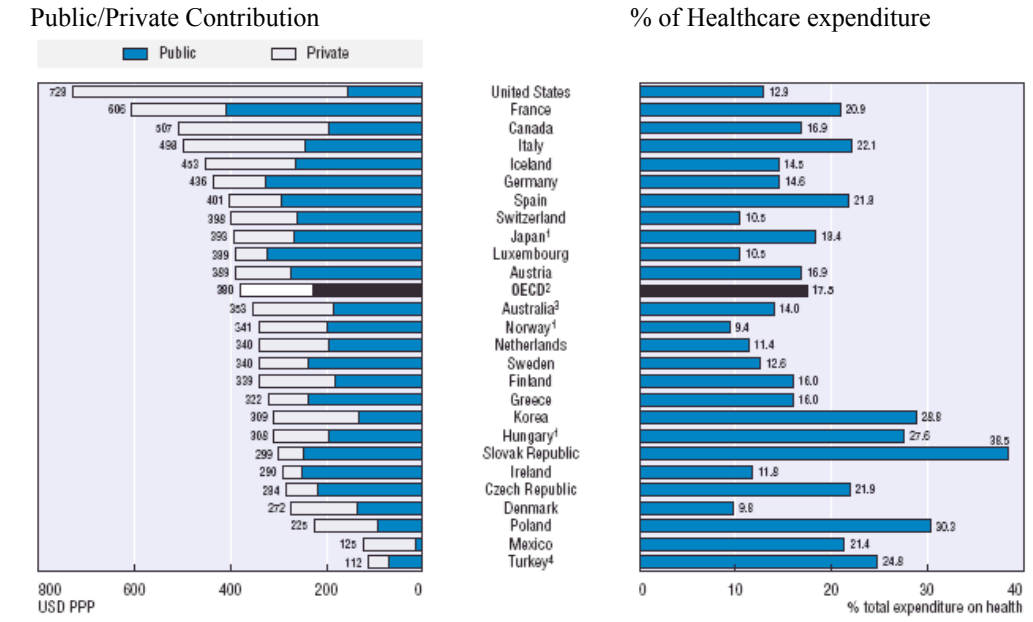
[21] Davis, Karen, Cathy Schoen, Stuart Guterman, Tony Shih, Stephen C. Schoenbaum, and Ilana Weinbaum. "Slowing the Growth of U.S. Healthcare Expenditures: What are the Options?" Prepared for The Commonwealth Fund/Alliance for Health Reform 2007 Bipartisan Congressional Health Policy Conference. January 2007, p.15

Figure 29:



Indeed, while the 13% the US allocated to prescription drugs in 2003 was well below that in other OECD countries, the actual per capita expenditures far exceeded its counterparts at 729 USD PPP. Furthermore, the private contributions alone accounted for more than what most OECD countries spent on pharmaceuticals in total.

Figure 30: Per Capita Expenditure on Pharmaceuticals, 2003



1. 2002.
2. OECD average excludes Poland and Turkey because of the unavailability of consistent time series.
3. 2001.
4. 2000.

Source: OECD, Health at a Glance, 2005

Information on the allocation of the healthcare dollar does not, however, convey the efficiency, effectiveness, or quality encompassed within each category of expenditure. For example, despite the high level of spending for hospital care and physician services, there are fewer than 3 acute care hospital beds and just over 2 practicing physicians per 1000 population- considerably less than countries whose health expenditures fall well below that of the US.

While the financing of healthcare entails a combination of private and public resources, the delivery is predominantly private and market driven. However, less than optimal competition and **a dearth of consumer information** render the healthcare market inefficient and contribute to the high and increasing healthcare costs (Schoenbaum et al 2007). Increasing costs, in turn, affect both access to care as well as the quality of care that is received.

Although there is a general consensus that the existing healthcare system in the US is inefficient and often wasteful, there is deficiency in the evidence needed to promote evidence-based medicine and discourage costly and ineffective practices (Schoenbaum et al 2007). Furthermore, despite the advances in high-tech medicine, the US health system lacks effective use of information technology that would help resolve uncoordinated and duplicative practices. However, as Schoenbaum and colleagues eloquently point out, one man's waste is another man's treasure and this is abundantly evident in the US healthcare system today:

> *"A payer's spending on tests and procedures, after all, provides profit to others—physicians, hospitals, pharmaceutical companies, manufacturers of medical equipment, and various vendors of medical services. These and other powerful interests have a stake in our currently high and rising level of health spending, and it is not uncommon for one to point a finger at others as the source of blame. Needless to say, getting all stakeholders to participate in solutions will be a daunting task." (Schoenbaum et al 2007, p.4)*

This is exemplified by the practice by healthcare providers of expanding the volume of services delivered in order to offset the reduced fees offered under managed care plans and Medicare (Davis et al, 2007 p.15). In other words, increasing inefficiency helps balance the books.

Quality of Care

Given the record high and growing cost of healthcare and the burden this places on public sources, businesses and individuals, there has been increased attention to the quality and efficiency of that care. Consequently, the Agency for Healthcare Research and Quality (AHRQ) was established in 2003 to "improve the quality, safety, efficiency, and effectiveness of health care for all Americans"[22]. Through research and analysis, the AHRQ tracks and monitors changes in the quality of care in the US and offers evidence-based guidance for improvements. The 2006 National Healthcare Quality Report, the 4th such report, suggested that healthcare quality is generally improving in the US. Nevertheless, despite increasing expenditures, 5% of the quality measures which have been tracked over the four years have demonstrated deterioration and there is evidence for wide inequalities between states. Furthermore, the rate of reported improvements in quality, on average 3.1% per year across the core measures[23], lags behind the rate of increase in expenditures (refer to figure 10). The report, while useful for tracking changes over time, does not convey how the quality of the US healthcare system fares with respect to other countries whose expenditures fall well below those of the US. When such a comparative perspective is taken, we see that the quality of the US healthcare system falls short of other OECD countries despite its greater expenditures (figure 31).

Figure 31:

Healthcare indicators for eight countries

	Australia	Canada	France	Germany	Japan	New Zealand	United Kingdom	United States
Health expenditures per capita ($)[w1]	2876	3165	3159	3005	2249	2083	2546	6102
Life expectancy at age 60*[w2]	18.2	17.7	18.4	17.5	19.6	17.1	16.9	16.6
Deaths amenable to medical care/100 000 population[w2]	88	92	75	106	81	109	130	115
Access problems (%)†[w3]	34	26	n/a	28	n/a	38	13	51
Breast cancer 5 year survival (%)[w1]	80.0	82.0	79.7	78.0	79.0	79.0	80.0	88.9
Myocardial infarction 30 day hospital mortality (%)[w1]	8.8	12.0	8.0	11.9	10.3	10.9	11.0	14.8
Deaths from surgical or medical mishaps/ 100 000 population (2004)*[w1]	0.4	0.5	0.5	0.6	0.2	n/a	0.5	0.7

*Average of male and female healthy life expectancies. †Percentage of adults with health problems who did not fill prescription or skipped doses, had a medical problem but did not visit doctor, or skipped test, treatment, or follow-up in the past year because of costs.

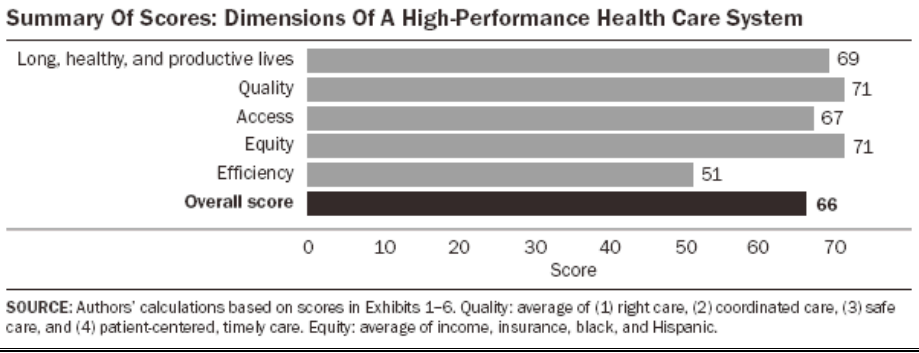
Source: Karen Davis. *Uninsured in America: Problems and Possible Solutions*. BMJ 334 (2007).

A recent report by Schoen and colleagues (2006) applied a national scorecard to the US health system which addressed aspects of health outcomes, quality, access, efficiency, and equity.

[22] AHRQ mission statement available at: http://www.ahrq.gov/about/budgtix.htm
[23] National Healthcare Quality Report 2006

The scorecard uses benchmarks based on best achievements, internationally or within the US, to determine the relative state of the healthcare system. Their findings demonstrate that, the US scores 66 overall across the various dimensions with an average 50 on efficiency and 70 on the dimensions of healthy lives, quality, access and equity[24] (figure 32).

Figure 32:



Source: Schoenbaum et al. *US Health System Performance: A National Scorecard*. Health Affairs 25. 2006. p. w473.

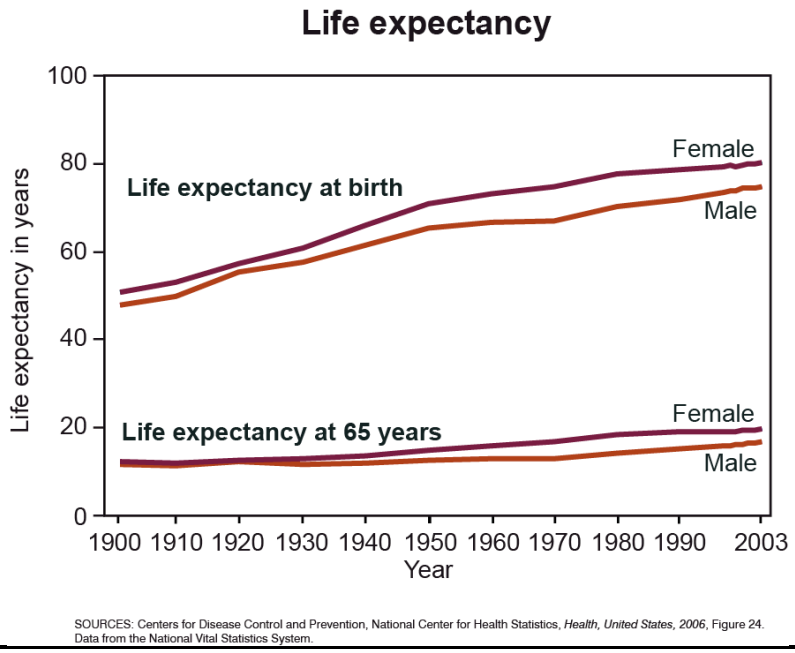
Contrary to what one would expect in a functioning, competitive, market-driven system, the healthcare dollar in the US appears to be inefficiently spent on relatively poor quality services.

General Health Profile of US Population

It is undeniable that the US has experienced significant improvements in health over the past century. Perhaps most indicative of that improvement is the increases in life expectancy. Life expectancy at birth in 1900 was 48 years for males and 51 for females. By 2003, life expectancy had increased 27 years for males and 29 years for females, reaching 75 and 80 years respectively. Life expectancy at 65, conveying the additional years of life expected after 65 years have been reached, have also demonstrated improvements, albeit not as dramatic. In 1900 both men and women who reached 65 years were expected to live an additional 12 years. In 2003, the expectation was 17 years for men and 20 for women.

[24] Schoen et al. *US Health System Performance: A National Scorecard*. Health Affairs 25. 2006

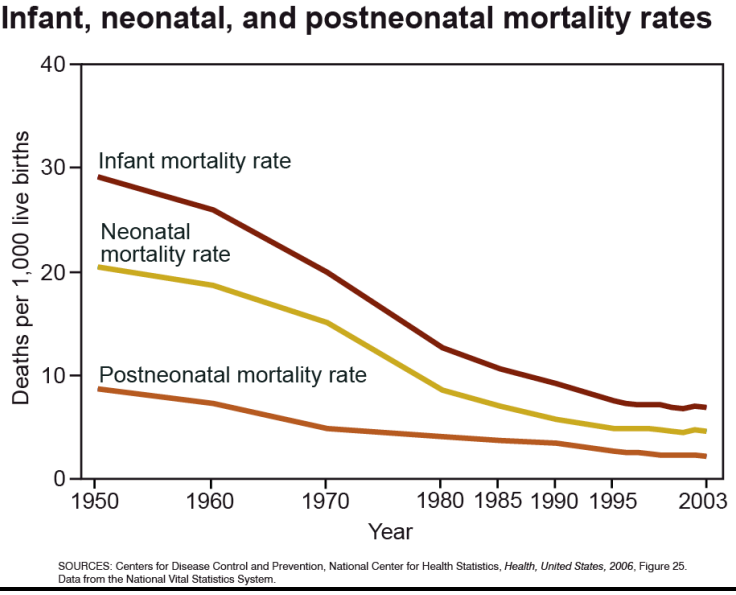
Figure 33:



Source: Health, United States 2006

Since life expectancy at birth figures are by design heavily weighted towards infant and child mortality, the increases reflect the significant improvements in infant and child survival. The US has achieved more than a 75% reduction in infant mortality since the 1950s reaching 6.9 deaths per 1000 live births in 2003. As for child mortality, the probability of dying between birth and five years of age in 2005 according to UNICEF was 7 per 1000 live births.

Figure 34:



Source: Health, United States 2006

While the declines in infant mortality and subsequent improvements in life-expectancy in the US are impressive, they fall below average when compared to other OECD countries. This suggests that despite the heavy investments, the health of Americans is lagging behind those of other industrial countries. The probability of an American infant dying is higher than an infant born in most other OECD countries and Americans can expect, on average, 4 years less life than their Japanese counterparts. Furthermore the US ranks 156 out of 190 countries with respect to child mortality.

Figure 35:

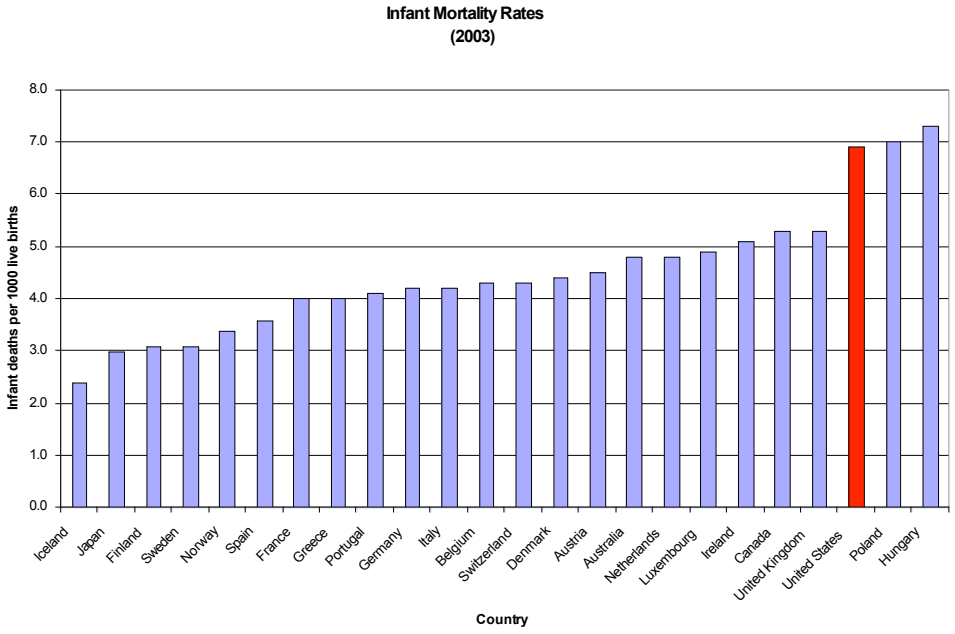
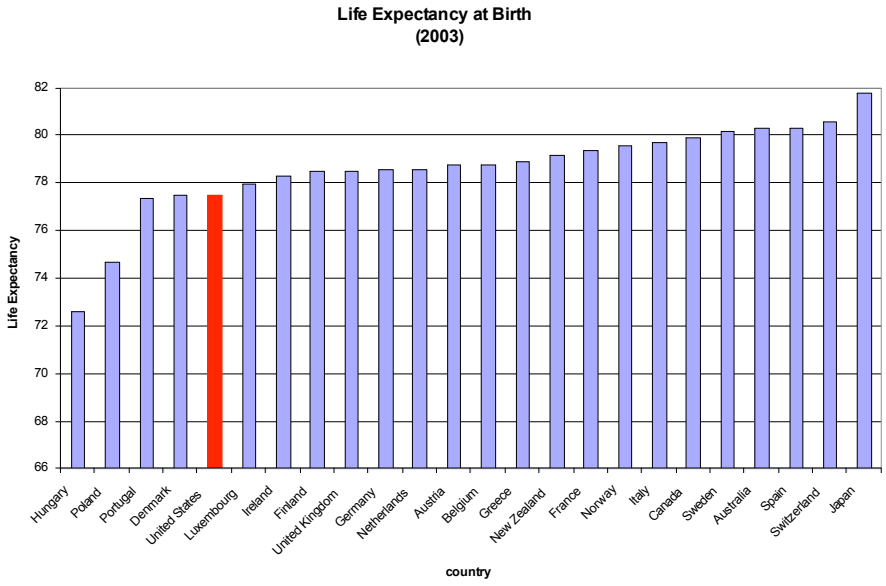


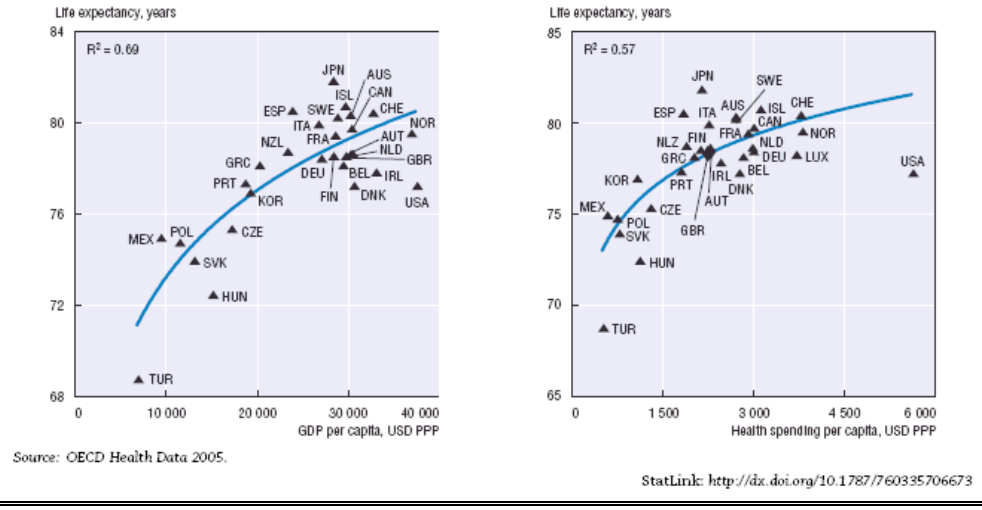
Figure 36:



Source: OECD Health Statistics 2006

Figures 37-38 demonstrates that life expectancy in the US is incommensurate to per capita GDP and health spending, falling below the expected relationship between income/expenditures and health outcomes. Thus, while Americans may be richer and spend more on health, they are not reaping the rewards- at least in terms of increased life.

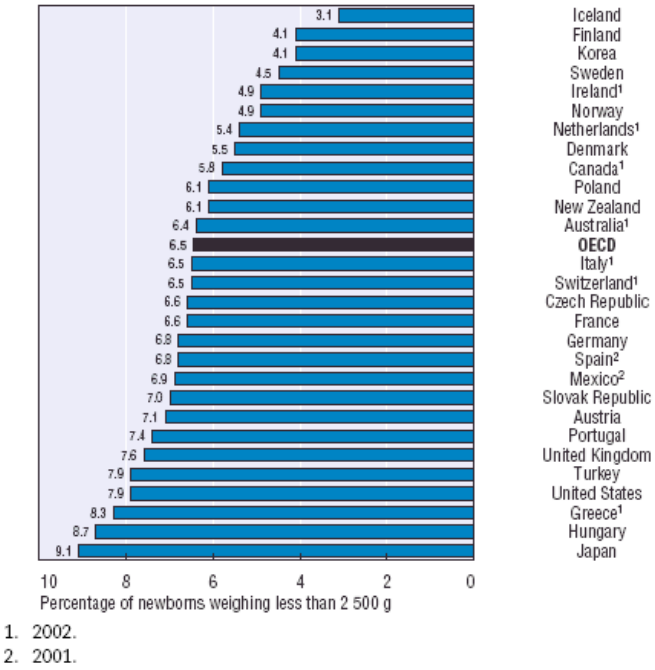
Figure 37-38:



Source: OECD Health at a Glance, 2005

Low birth weight is another means by which to assess the health of a population through determining future vulnerability to mortality and morbidity. Birth weight below the recommended 2500 grams may result either from premature birth or from intrauterine growth retardation and often reflects the health and nutrition status of the mother during pregnancy as well as the vulnerability of the infant to death, disease, and disability. According to OECD statistics, as of 2003 7.9% of infants born in the US weighed less than 2500 grams, an increase of 16.2% since 1980. This is well above the OECD average of 6.5%. The disturbing trend suggests that not only is the healthcare system failing to achieve standards set by other OECD countries with respect to infant and maternal health, but is further deteriorating in this respect. The US proves an outlier amongst its OECD counterparts both in terms of infant mortality rates as well as the incidence of low birth weight infants.

Figure 39:Low birth weight infants (2003)



1. 2002.
2. 2001.

Source: OECD, Health at a Glance, 2005.

Maternal mortality is another indicator commonly employed to convey a population's health and the effectiveness of the healthcare system in protecting their vulnerable. While maternal mortality has demonstrated significant declines across OECD countries since the 1960s, current mortality rates once again place the US above that of other OECD countries.

Figure 40:

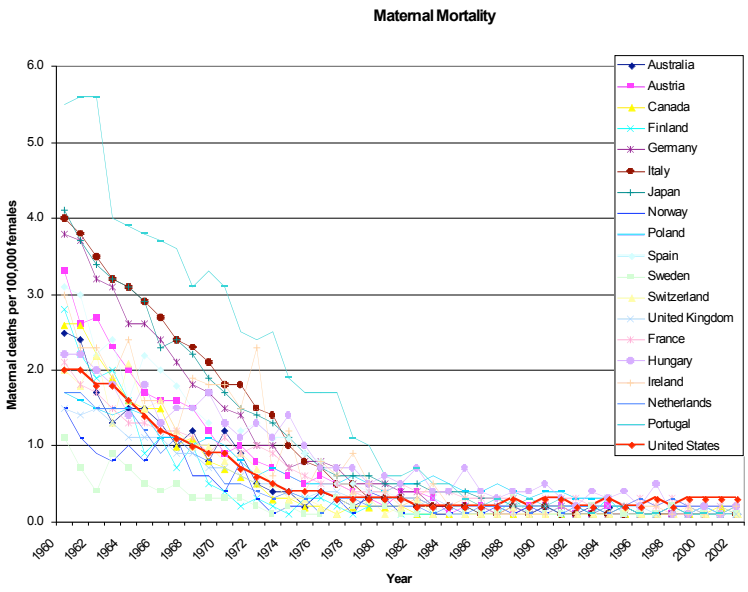
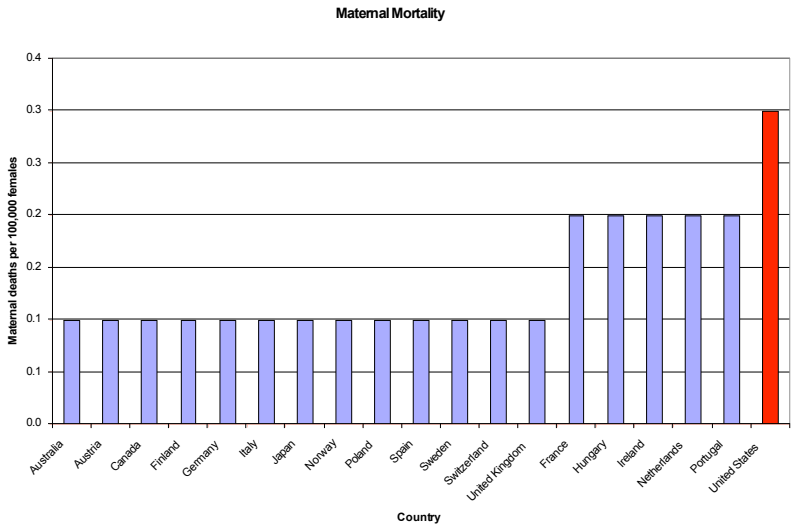


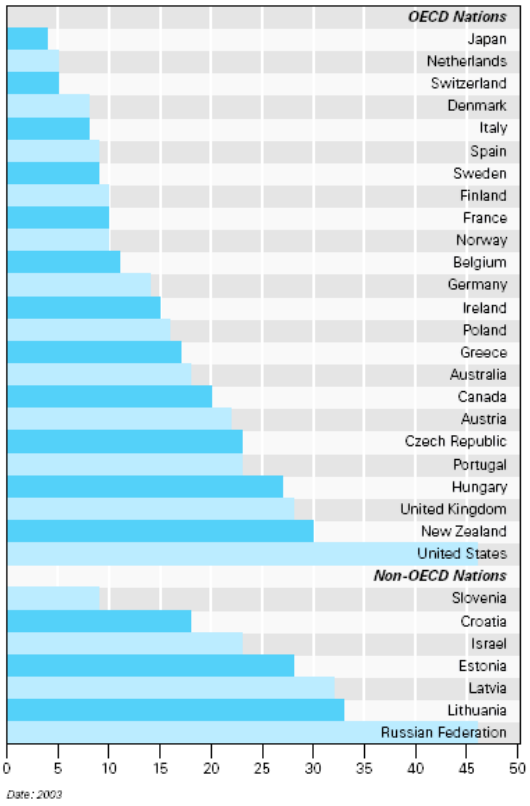
Figure 41:



Source: Calculated from OECD Health Data 2006

This may be due in part to the higher rates of teenage pregnancy in the US which is associated with higher risks, both to the mother during childbirth as well as to the new born child.

Figure 42: Teenage Fertility Rate: Births per 1,000 women aged 15-19

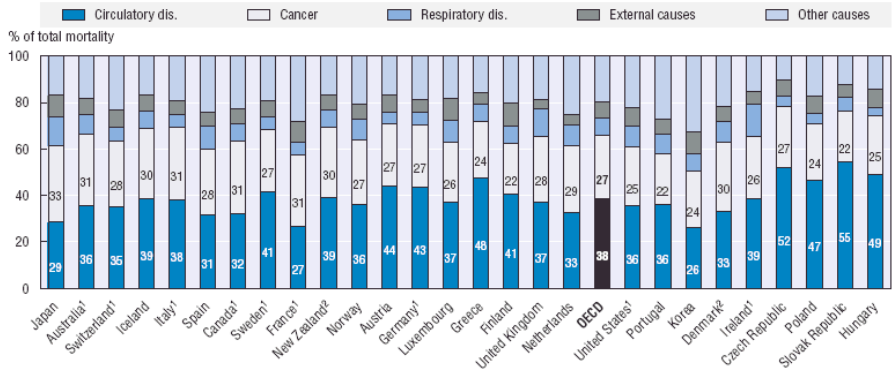


Source: Innocenti Report 2007

Causes of Death

With an overall age-adjusted rate of mortality at 674 per 100,000 population in 2002, the US ranks 19th out of 27 OECD countries and supersedes the OECD mean of 650[25]. The leading causes of death in the US, similar to those of other OECD countries, include, in order of prevalence, circulatory diseases, cancers, respiratory diseases, and external causes.

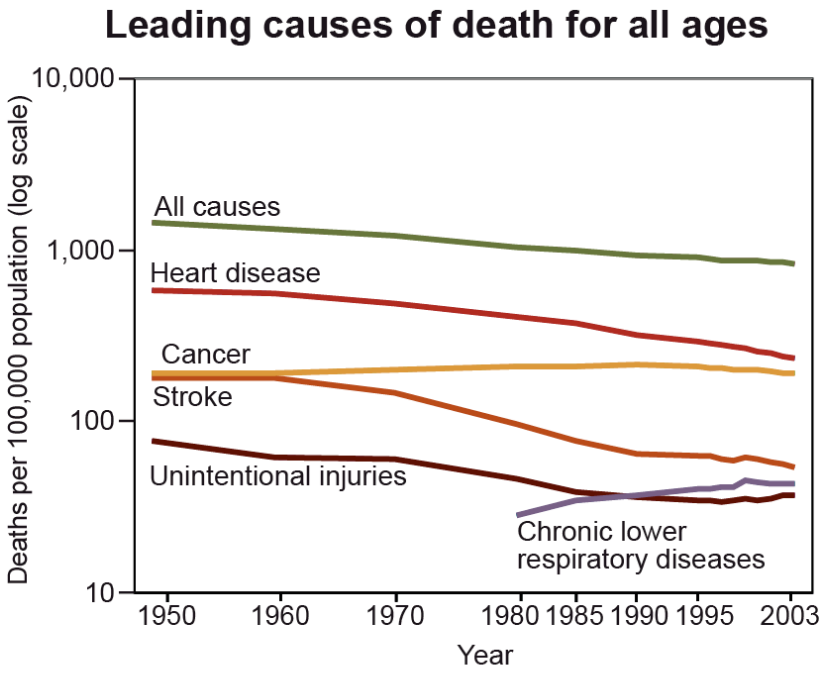
Figure 43: Leading Causes of Death (2002)



1. 2001.
2. 2000.

Source: OECD, Health at a Glance 2005

Figure 44:

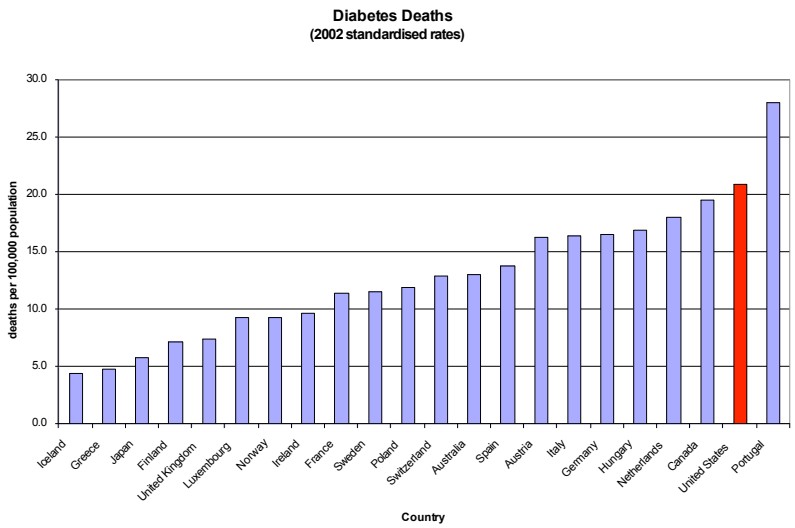


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, *Health, United States, 2006*, Figure 27. Data from the National Vital Statistics System.

[25] Note that the OECD mortality rates are standardized according to the OECD standard population (1980). The subsequent graph from the Health, US Report 2006 depicts rates standardized to the 2000 US population. Thus, while the US Health Report figures can be used to compare mortality rates over time within the US, the OECD figures must be used if cross-country comparisons are to be made.

Source: Health, United States 2006

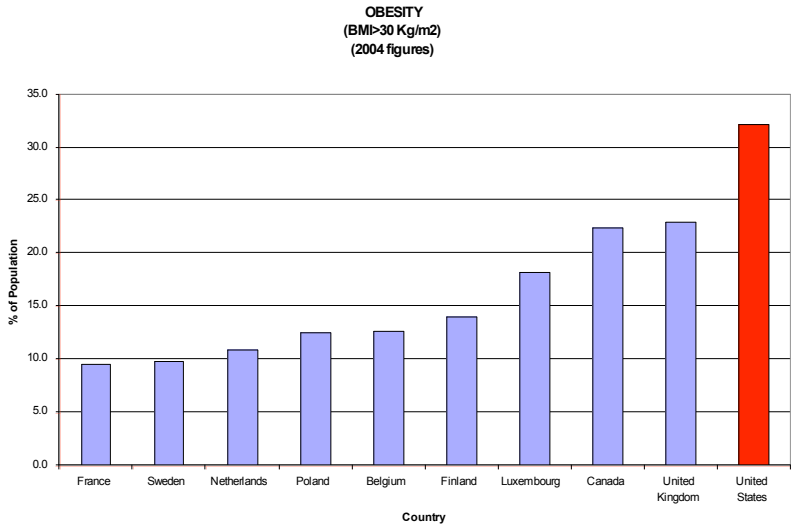
Figure 45:



source: OECD Health Data, 2006

Lifestyle and health behaviors play a large part in the prevalence of both cardiovascular diseases, cancers and diabetes. Of particular concern is the high and growing rate of obesity: as of 2004, more than one-third of the US population (34.1%) was classified as obese according to a body-mass index exceeding 30kg/m2.

Figure 46:

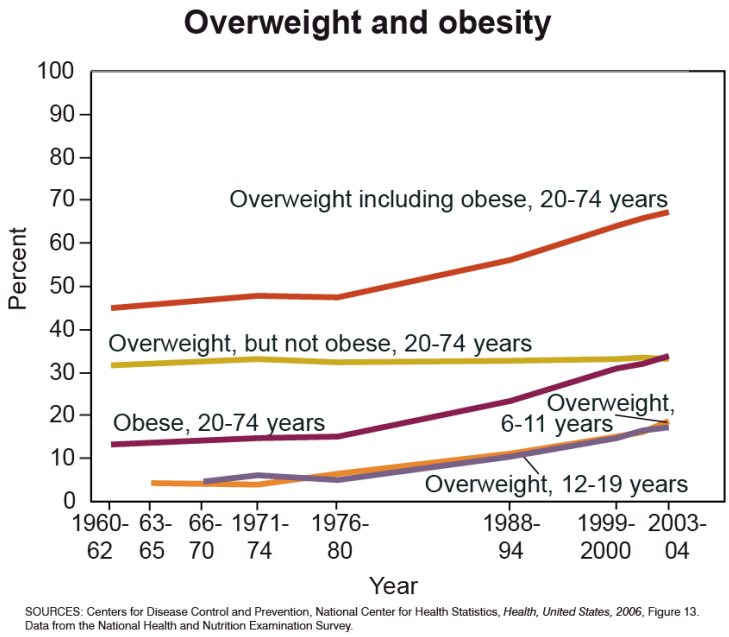


source: OECD Health Data, 2006

If the threshold is reduced to BMI>25kg/m2, indicating 'overweight', we see that as of 2004, more than two-thirds of all Americans aged 20-74 years (67%) were susceptible to the risks associated with overweight and obesity. What is even more concerning is the growing rate of

overweight children in America. As of 2004, nearly one-fifth (17-19%) of children and adolescents aged 6-19 were overweight[26].

Figure 47:



Source: Health, United States 2006 figure 13

On the other hand, the prevalence of smoking among Americans has more than halved from a high of 42.4% in 1965 to 17% in 2004. These impressive reductions illustrate the success of public health campaigns in effectively disseminating the growing volume of research on the risks of smoking to policy-makers and the public.

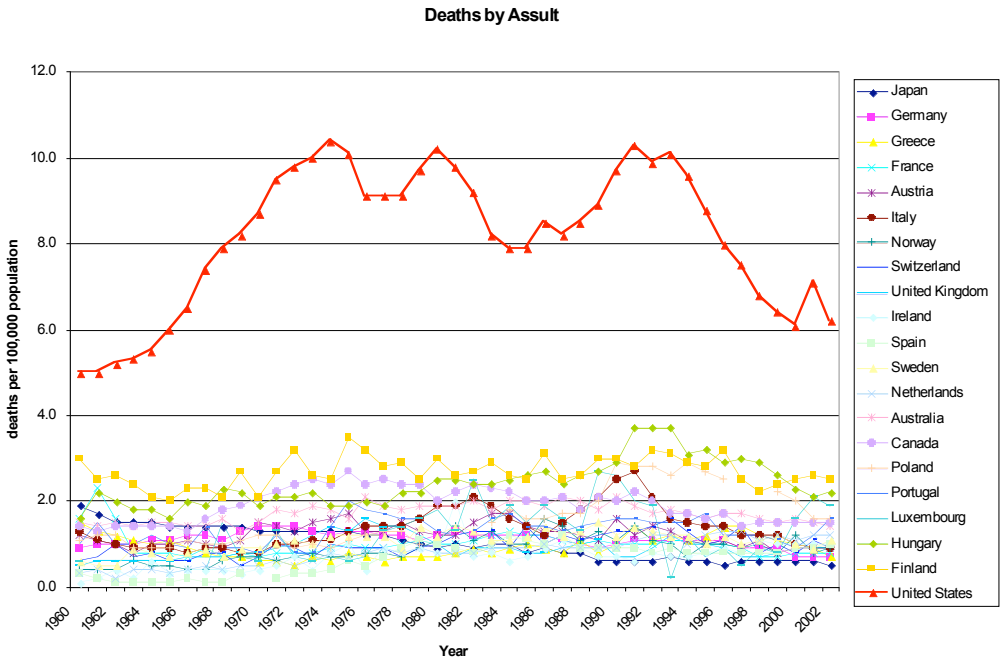
Violence

Classified under external causes, deaths by assault are far greater in the US than any other OECD country. As of 2002, there was an average of just over 6 deaths per 100,000 attributed to assault. This is more than two times higher than that in other OECD countries. When broken down by gender, the figures are even more alarming with male homicide deaths reaching 11 per 100,000, more than three times higher than the next highest rate of 3.2 among Finish men[27].

[26] The definition of overweight differs from that of adults, in this case "overweight is defined as a BMI at or above the sex- and age-specific 95th percentile BMI cut points from the 2000 CDC Growth Charts: United States." (Health, United States, 2006 p.39).

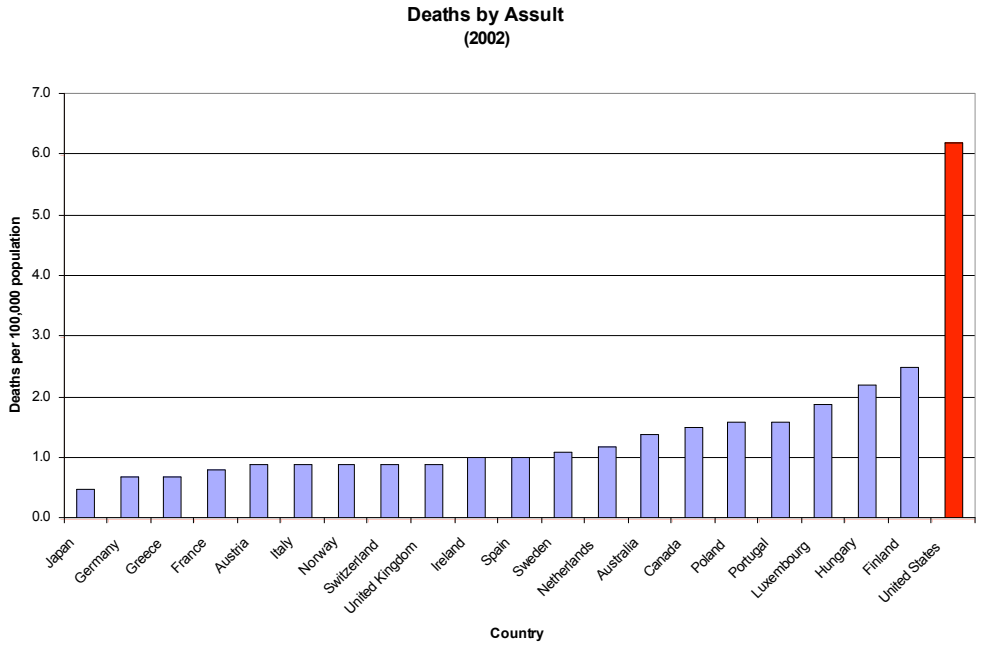
[27] OECD, Health at a Glance 2005.

Figure 48:



Source: Calculated from OECD Health Data 2006

Figure 49:

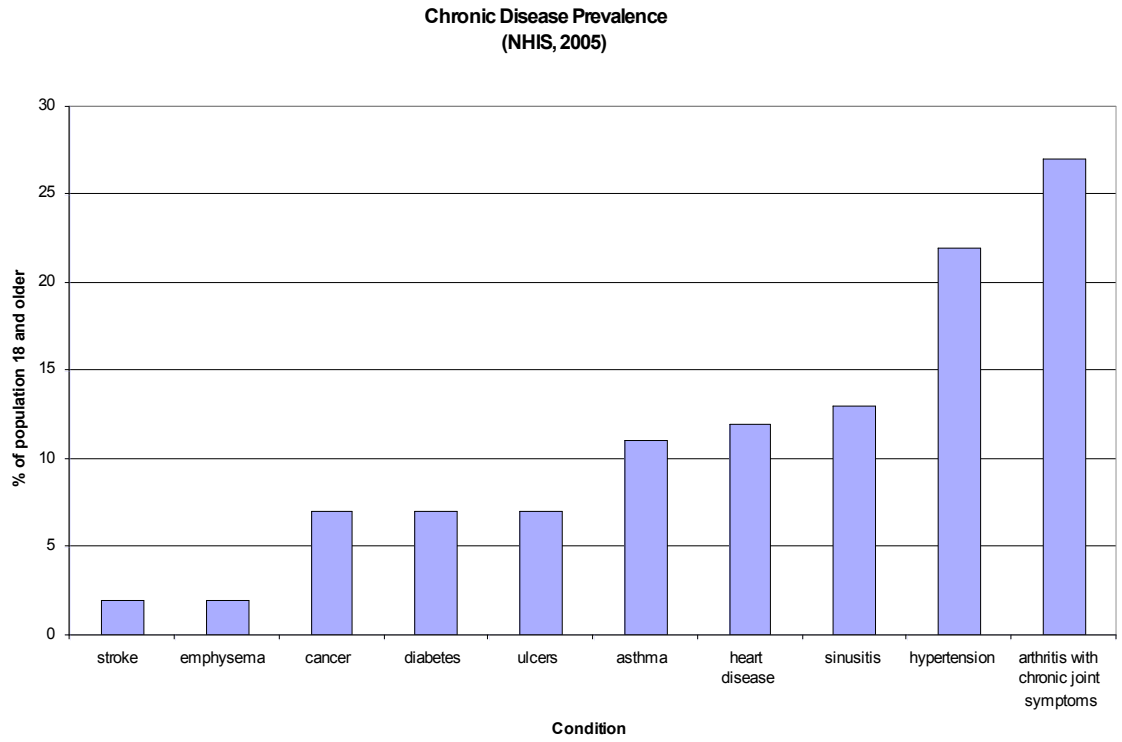


Source: Calculated from OECD Health Data 2006

Morbidity

Some of the main chronic diseases in the US today include: hypertension, heart disease, stroke, emphysema, diabetes, cancer, arthritis, and asthma. According to the 2005 National Health Interview Survey, 22% of Americans aged 18 and older reported ever being told by a health professional that they had hypertension, 12% were told they had heart disease, 11% asthma, 13% sinusitis, 7% cancer, 7% diabetes, 7% ulcers, 21% with any form of arthritis and 27% with chronic joint symptoms. In addition, the survey found that 11% of American adults reported feelings of sadness in the past 30 days, 6% felt hopeless, 5% worthless, 16% had feelings of nervousness, and 18% restlessness.

Figure 50:



Source: Calculated from NHIS 2005 data

While some of these conditions contribute to mortality, others compromise the quality of life without leading (at least not directly) to death. For example, as of 2004, 6% of working-age Americans between the ages of 18 and 44 reported limitations of their activities resulting from a chronic condition. This increased to over one-fifth (21%) for Americans between the ages of 55 and 64[28]. Indeed, arthritis, which is least likely to contribute to mortality rates, was the most sited reason for limitations of daily activities. This was followed by mental illness among 18-44 year-olds and heart and circulatory conditions for Americans aged 45 to 64[29].

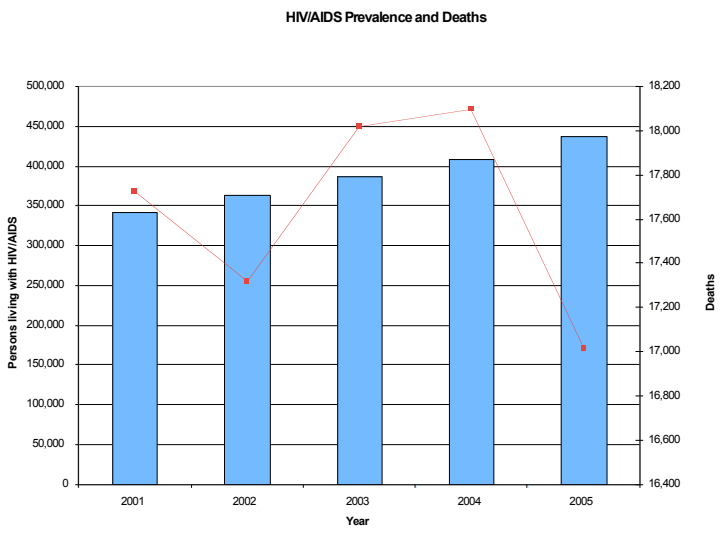
Infectious Diseases

[28] Health, United States, 2006.
[29] Health, United States, 2006.

As of 2004, the most prevalent notifiable infectious diseases in the US were Chlamydia (with 929,462 cases and a rate of 319.6 per 100,000), Gonorrhea (with 330,132 cases and a rate of 113.5 cases pre 100,000), and AIDS[30] (with 44,108 cases and a rate of 15.2 per 100,000)[31]. With respect to deaths from infectious diseases, the leading culprits were AIDS (with 14,095 deaths in 2002 and a crude mortality rate of 4.9 per 100,000), hepatitis C (with 4,321 deaths in 2002 and a crude mortality rate of 1.5 per 100,000), and tuberculosis (with 784 deaths in 2002 and a crude mortality rate of 0.3 per 100,000)[32].

As of 2005, there were a total of 437,982 Americans living with HIV/AIDS, an increase of almost 100,000 since 2001[33]. To date, AIDS has contributed to the death of 550,394 Americans having affected a total of 956,019. While the numbers of Americans living with HIV/AIDS continues to climb, the deaths having been fluctuating with a recent decline from 2004 to 2005.

Figure 51:



Source: Data from 2005 HIV/AIDS Surveillance Report.

Dental Health

Oral health is an often neglected dimension of overall health. Nevertheless, dental caries are considered one of the more common chronic diseases among children and their neglect can lead to serious infections and tooth loss[34]. Infections from tooth decay, if untreated, can have systemic consequences and tooth loss has been associated with a deterioration of nutritional status.

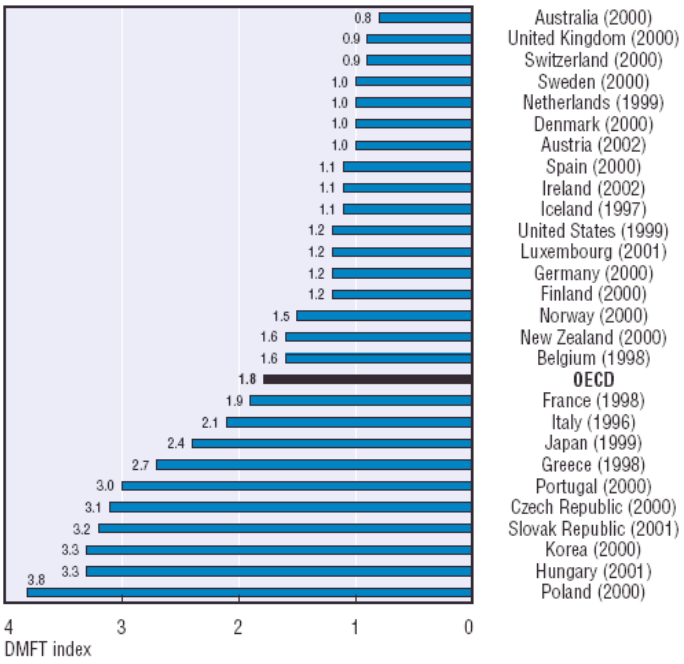
In the US, as of 2004, there were on average 59.4 dentists per 100,000 population[35]. However, access to dental healthcare is limited, especially for the poor and elderly: Medicare does not cover dental health and Medicaid coverage is limited and decreasing. This varies by state but according to a 2003 report card by Oral Health America, only 13-22% of American dentists regularly provided dental coverage for Medicaid patients and 71-80% of Americans aged

[30] Please note that this is the reported cases of AIDS and not the rate of HIV infection.
[31] Morbidity and Mortality Weekly Report, June 16, 2006, p.18.
[32] Morbidity and Mortality Weekly Report, June 16, 2006, p.37.
[33] Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report, 2005*. Vol. 17. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2006. Also available at: http://www.cdc.gov/hiv/topics/surveillance/resources/reports/.
[34] Health, United States, 2006. p.40.
[35] The New York Center for Health Workforce Studies. *The United States Health Workforce Profile*. October 2006. p.74.

65 and older reported not having any form of dental insurance. Furthermore, public water fluoridation which is an effective form of dental health protection was only available to three-quarters of Americans (62-74%). In sum "for every child that lacks medical coverage, 2.6 lack dental coverage. For every adult that lacks medical coverage, three are without dental coverage. Only two out of every ten older Americans are covered by private dental insurance. Three times as many parents report that their child has an unmet need for dental care than for medical care." (Oral Health America, 2003 Report Card, p.6)

Nevertheless, Americans score above average relative to other OECD countries in terms of dental health. An assessment of decayed, missing, or filled teeth (comprising the DMFT index) for 12 year-olds finds the US population to have an average index of 1.2 which is considered low according to OECD standards[36]. However, there is wide variation between different age groups.

Figure 52: Average DMFT index for 12 year olds

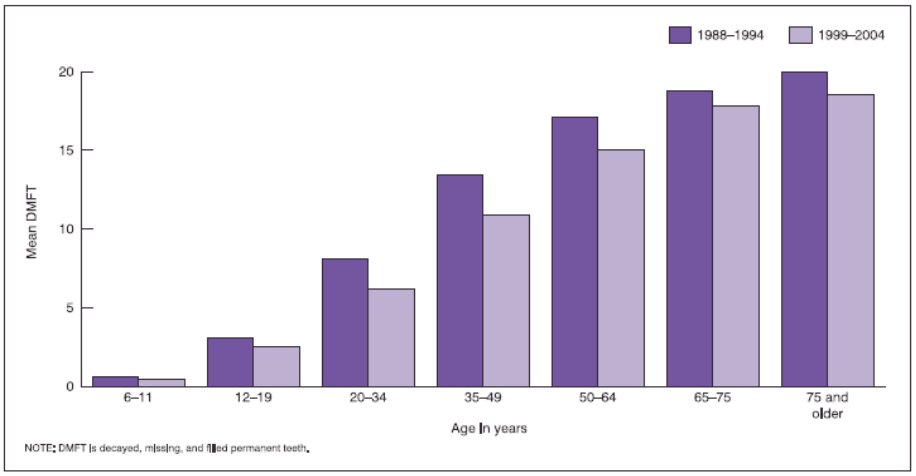


Definition and deviations: A DMFT of less than 1.2 is judged to be very low, 1.2 – 2.6 is low, 2.7 – 4.4 is moderate, and 4.5 or more is high. Norway provides an MFT index, which does not include decayed teeth. Sweden provides a DFT index, excluding a measure of missing teeth. The average age for New Zealand children may be slightly above 12, since Year 8 school children are surveyed.

Source: OECD, Health at a Glance, 2005

[36] OECD, Health at a Glance, 2005.

Figure 53:



Source: Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. National Center for Health Statistics. Vital Health Stat 11(248). 2007. p.3

There has been a general improvement in dental health over the past decade. Nearly one-third of American children aged 6-19 have received dental sealants which protect their permanent teeth from caries, and fewer elderly are losing all their teeth. Nevertheless, during 1999-2002, 41% of children 2-11 years-old had dental caries in their primary teeth, while 42% of children aged 6-19 and 90% of adults had caries in their permanent teeth[37]. Furthermore, between 1999 and 2002 approximately 21% of children aged 2-11 had untreated decay of their primary teeth and approximately 14% in their permanent teeth. The prevalence of untreated tooth decay increased to 23% for adults aged 20 and older[38]. Furthermore, since older people are retaining their teeth for longer, it is predicted that dental health needs of the elderly will be increasing. This is an especially important consideration given the aging US population and the existing limitations in access to dental health among this age group.

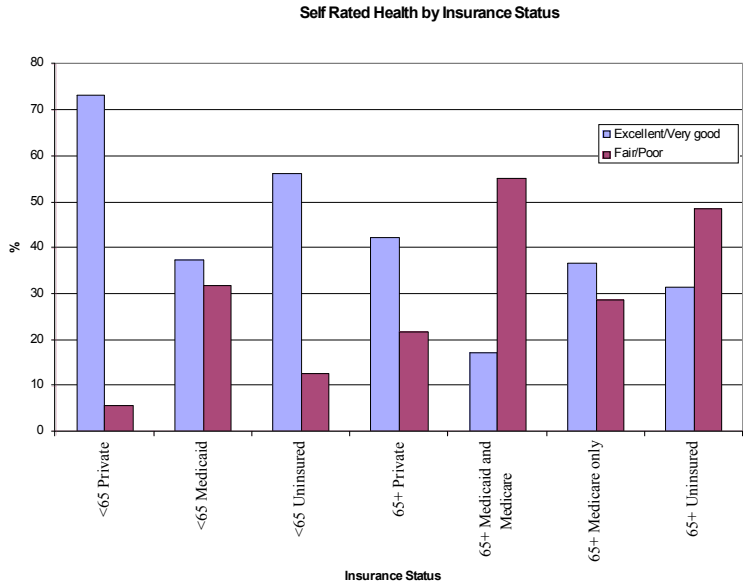
Subjective Health and Quality of Life

In addition to the subjective valuations of life including figures on mortality and morbidity, self-assessments of health also convey an otherwise uncaptured dimension of well-being. According to the 2005 National Health Interview Survey, 62% of Americans aged 18 and older reported excellent or very good health, 26% reported good health, while 12% stated their health to be fair or poor. When sorted by insurance status, we see quite a different picture. Nearly three-quarters of Americans younger than 65 years of age with private insurance reported excellent or very good health (73.2%) while almost half of the uninsured Americans aged 65 years or older reported fair or poor health (48.7%).

[37] MMWR Surveillance Summaries August 26 2005/ 54(3) pp.1-34. Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis- United States, 1988-1994 and 1999-2002.

[38] MMWR Surveillance Summaries August 26 2005/ 54(3) pp.1-34. Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis- United States, 1988-1994 and 1999-2002.

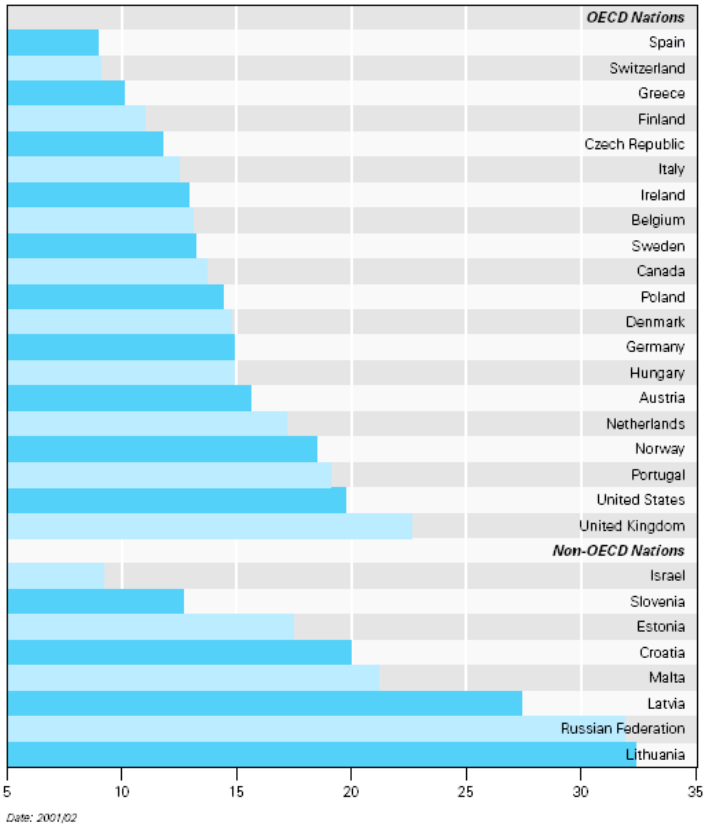
Figure 54:



If we turn to children's subjective health, we see that nearly 20% of American youth aged 11, 13 and 15 rated their health as fair or poor. When compared to other OECD countries, the United States comes in 19th out of 20 countries where the measure was available[39].

[39] Innocenti Report 2007

Figure 55: Percent of Young People aged 11, 13, and 15 who rate their health as 'fair' or 'poor'



Source: Innocenti Report 2007

If we expand further our assessment of health to include other dimensions of quality, as was done by UNICEF's recent report on children's well-being, we find that American children fare poorly compared to their OECD counterparts. In addition to health and safety, the dimensions used to assess a child's well being included material aspects, education, family and peer relationships, behaviors and risks as well as subjective well-being. Overall, the US scores 18 and ranks 19th out of the 20 OECD countries compared. It would appear that despite the nearly $2 trillion spent on healthcare alone in 2005, the needs of American children are not being met. This conveys a stark message about the attention we pay to our future generations.

Figure 56:

The chart below presents the findings of this *Report Card* in summary form. Countries are listed in order of their average rank for the six dimensions of child well-being that have been assessed.[1] A light blue background indicates a place in the top third of the table; mid-blue denotes the middle third and dark blue the bottom third.

		Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5	Dimension 6
Dimensions of child well-being	Average ranking position (for all 6 dimensions)	Material well-being	Health and safety	Educational well-being	Family and peer relationships	Behaviours and risks	Subjective well-being
Netherlands	4.2	10	2	6	3	3	1
Sweden	5.0	1	1	5	15	1	7
Denmark	7.2	4	4	8	9	6	12
Finland	7.5	3	3	4	17	7	11
Spain	8.0	12	6	15	8	5	2
Switzerland	8.3	5	9	14	4	12	6
Norway	8.7	2	8	11	10	13	8
Italy	10.0	14	5	20	1	10	10
Ireland	10.2	19	19	7	7	4	5
Belgium	10.7	7	16	1	5	19	16
Germany	11.2	13	11	10	13	11	9
Canada	11.8	6	13	2	18	17	15
Greece	11.8	15	18	16	11	8	3
Poland	12.3	21	15	3	14	2	19
Czech Republic	12.5	11	10	9	19	9	17
France	13.0	9	7	18	12	14	18
Portugal	13.7	16	14	21	2	15	14
Austria	13.8	8	20	19	16	16	4
Hungary	14.5	20	17	13	6	18	13
United States	18.0	17	21	12	20	20	–
United Kingdom	18.2	18	12	17	21	21	20

OECD countries with insufficient data to be included in the overview: Australia, Iceland, Japan, Luxembourg, Mexico, New Zealand, the Slovak Republic, South Korea, Turkey.

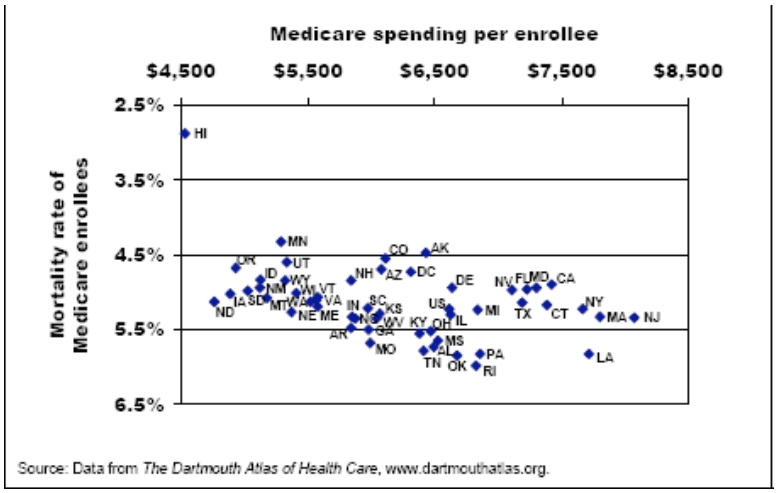
Source: Innocenti Report 2007

Inputs and Outcomes

There is a growing body of evidence that the amount of spending on healthcare does not necessarily translate into positive health outcomes. This is thought to be due, in part, to inefficiencies and poor quality within the healthcare system that has largely been left unchecked. The Dartmouth Atlas of Healthcare clearly demonstrates the lack of correlation between the amount of state Medicare spending and health outcomes or quality of healthcare received: while Hawaii spent the least per Medicare beneficiary ($4,530) they had lower mortality rates than New Jersey which was on the other extreme with nearly twice the expenditure ($8,080)[40].

[40] Davis, Karen, Cathy Schoen, Stuart Guterman, Tony Shih, Stephen C. Schoenbaum, and Ilana Weinbaum. "Slowing the Growth of U.S. Healthcare Expenditures: What are the Options?" Prepared for The Commonwealth Fund/Alliance for Health Reform 2007 Bipartisan Congressional Health Policy Conference. January 2007.

Figure 57: Medicare Spending and Mortality (2003)



Source: Davis et al 2007 figure 7

III. Inequalities in Health and the Healthcare System

Inequalities in the US are manifest in the healthcare system and its consequences on the health and well-being of Americans is increasingly evident. Far from being addressed, inequalities across economic, ethnic, geographic, gender and age groups are growing at an alarming rate. The inequalities exist as differential risks and behaviors, in the accessibility, provision and quality of healthcare, as well as in the health outcomes. Additionally, it is not only inequalities *in* health which are concerning, but also the affects inequalities in other aspects of life have *on* health. This section will look at inequalities in American health and healthcare along economic, ethnic, geographic, gender, and age lines and explore temporal trends wherever possible. The causes and consequences of such inequalities will also be explored with an emphasis on the inter-relationship with inequalities in other dimensions of American life.

Before launching into such an analysis, it is important to call attention to the units of measure by which inequalities are commonly described. What is it about the particular unit, be that geographic, ethnic, or economic, which renders it distinct and explains the differential relationship to the health outcome? Furthermore, given that our categorizations are often overlapping, it begs the question of what quality of the category is relevant to elucidate a causal pathway. Such questions are imperative for the formulation of effective interventions which address not only manifestations of a growing problem but rather the root causes. While it is beyond the scope of this report to propose causal pathways, it does suggest caution in the interpretation of the disparities as presented.

Income and Race/Ethnicity

Since two of the main categories by which disparities will be illustrated are income and race/ethnicity, their interrelationship within the US merits consideration. According to US Census Bureau statistics, the three year average median household income was highest among Asians, followed by Native Hawaiian/Pacific Islanders, and white-non-Hispanics while the lowest incomes belonged to Blacks and Native Americans/Alaskan Natives (figure 58). Of note, however, is the large variation within the different ethnic groups as evidenced by the 90% confidence intervals. This suggests that current ethnic and racial categorization may be

combining groups that are likely quite heterogeneous. Furthermore, there has been a considerable amount of research indicating that the increased prevalence of mixed ethnic and racial groups are largely disregarded in national statistics. While this is beginning to be addressed, much of the data is as yet confined to single race or ethnic groupings. The miscategorization of race is also an issue of concern which has been most documented among Native American populations.

Figure 58:

Income of Households by Race and Hispanic Origin Using 3-Year-Average Medians: 2003 to 2005

(Income in 2005 dollars)

Race[1] and Hispanic origin	3-year-average median income[2] 2003–2005[3] (dollars)	
	Estimate	90-percent confidence interval[4] (±)
All races	**46,037**	**216**
White	48,399	226
White, not Hispanic	50,677	252
Black	31,140	397
American Indian and Alaska Native	33,627	1,680
Asian	59,877	1,239
Native Hawaiian and Other Pacific Islander	54,318	4,183
Hispanic origin (any race)	35,467	521

[1] Federal surveys now give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White ***and*** American Indian and Alaska Native or Asian ***and*** Black or African American, is available from Census 2000 through American FactFinder. About 2.6 percent of people reported more than one race in Census 2000.

[2] The 3-year-average median is the sum of three inflation-adjusted single-year medians divided by 3.

[3] The 2004 data have been revised to reflect a correction to the weights in the 2005 ASEC.

[4] A 90-percent confidence interval is a measure of an estimate's variability. The larger the confidence interval in relation to the size of the estimate, the less reliable the estimate. For more information, see "Standard Errors and Their Use" at <www.census.gov/hhes/www/income/p60_231sa.pdf>.

Source: U.S. Census Bureau, Current Population Survey, 2004 to 2006 Annual Social and Economic Supplements.

Source: Income Poverty and Health Insurance Coverage in the United States: 2005. August 2006 p.8[41]

Median family income, while useful, may be misleading with respect to the families' level of impoverishment which includes consideration of the number of household members and the estimated costs of living. According to the US census bureau, the 2005 official poverty rate was 12.6% which translates into 37 million Americans, 20.5 million of whom were between the ages of 18 and 64. Non-Hispanic Whites had a poverty rate of 8.3%, while blacks had a rate of 24.9%, and Hispanics 21.8%[42]. Interestingly, poverty levels show slightly different rankings among the different ethnic/racial groups than median income: non-Hispanic whites had the lowest poverty rates and American Indians/Alaskan Natives the highest.

[41] DeNavas-Walt, Carmen, Bernadette D. Proctor, and Cheryl Hill Lee, U.S. Census Bureau, Current Population Reports, P60-231, *Income, Poverty, and Health Insurance Coverage in the United States: 2005*, U.S. Government Printing Office, Washington, DC, 2006.

[42] Income Poverty and Health Insurance Coverage in the United States: 2005. August 2006

Figure 59:

Number in Poverty and Poverty Rates by Race and Hispanic Origin Using 3-Year Average: 2003 to 2005

(Numbers in thousands. People as of March of the following year)

Race[1] and Hispanic origin	3-year average 2003–2005[2]			
	Number		Percentage	
	Estimate	90-percent confidence interval[3] (±)	Estimate	90-percent confidence interval[3] (±)
All races	36,617	494	12.6	0.2
White	24,824	399	10.6	0.2
White, not Hispanic	16,346	329	8.4	0.2
Black	8,988	242	24.7	0.6
American Indian and Alaska Native	573	65	25.3	2.5
Asian	1,335	98	10.9	0.8
Native Hawaiian and Other Pacific Islander	79	24	12.2	3.6
Hispanic origin (any race)	9,180	252	22.0	0.6

[1] Federal surveys now give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White *and* American Indian and Alaska Native or Asian *and* Black or African American, is available from Census 2000 through American FactFinder. About 2.6 percent of people reported more than one race in Census 2000.

[2] The 2004 data have been revised to reflect a correction to the weights in the 2005 ASEC.

[3] A 90-percent confidence interval is a measure of an estimate's variability. The larger the confidence interval in relation to the size of the estimate, the less reliable the estimate. For more information, see "Standard Errors and Their Use" at <www.census.gov/hhes/www/p60_231sa.pdf>.

Source: U.S. Census Bureau, Current Population Survey, 2004 to 2006 Annual Social and Economic Supplements.

Source: Income Poverty and Health Insurance Coverage in the United States: 2005. August 2006 table 5.

If we include the 'near poor', defined as those with household incomes between 100% and 199% of the Federal poverty level, 59% of Hispanics less than 65 years old, 57% of American Indians/Alaskan Natives, and 54% of African Americans would qualify as being relatively impoverished. These figures increase for the elderly, among whom 69% of the Hispanic, 67% of African Americans, and 61% of American Indians/Alaskan Natives have household incomes less than 200% of the Federal income levels. It therefore follows that non-white and older Americans are more likely to be poor or near poor.

Figure 60:

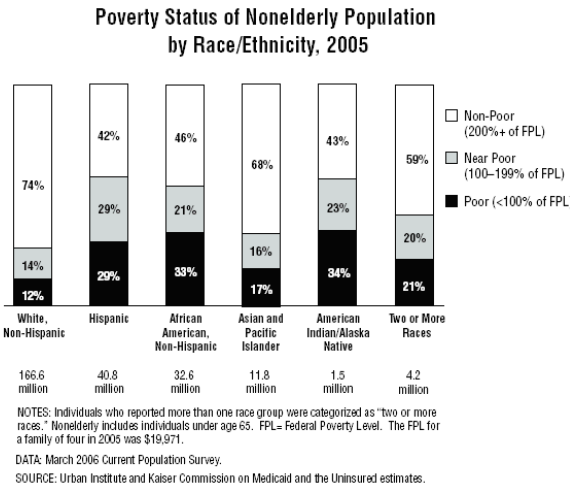
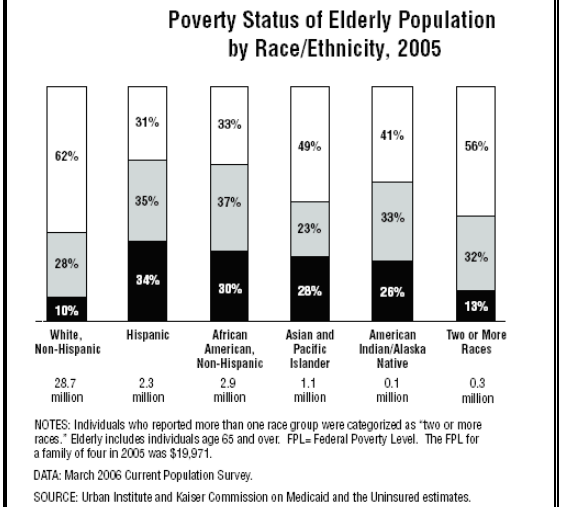


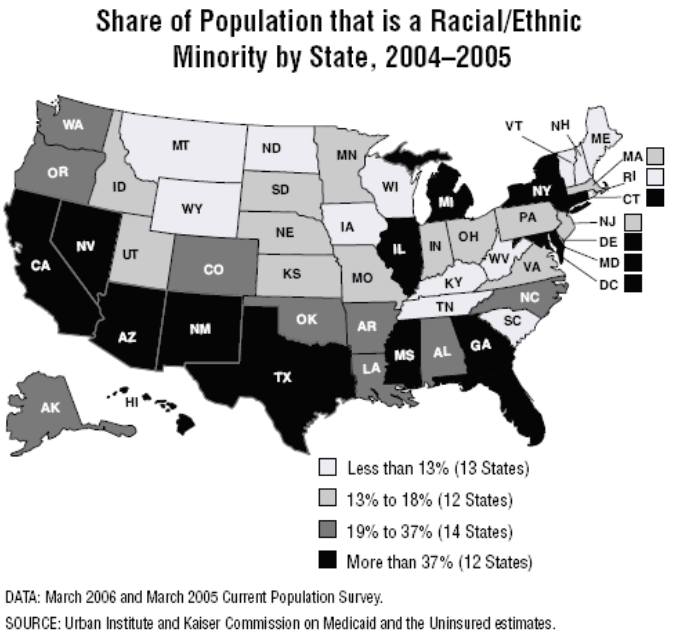
Figure 61:



Source: KFF. *Key Facts: Race, Ethnicity and Medical Care*, 2007. Figures 4 and 5

The geographic distribution of ethnic groups across America demonstrates that while 13 states (such as Maine, Wyoming or Montana) have less than 13% of their population made up of racial/ethnic minorities, another 12 (such as California, Florida, or New York) have more than 37%. This distribution, however, does not mirror the levels of poverty across US States.

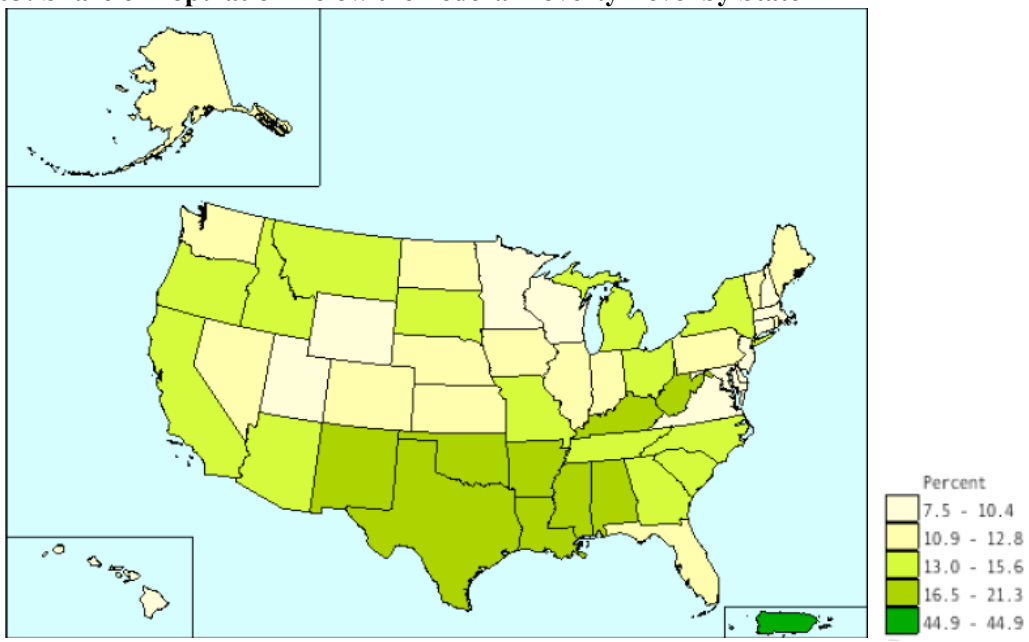
Figure 62:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007*. p.11 figure 3.

Although there does not appear to be any clear geographic pattern, states with the highest proportion of their population below the Federal poverty level seem to be concentrated in the South.

Figure 63: Share of Population Below the Federal Poverty Level by State



Source: US Census Bureau, American Factfinder (2005)

Inequalities in Healthcare Provision

Inequalities in healthcare provision include disparities in expenditures, availability and accessibility of resources, and differentials in the quality of care provided. The following section is divided into three parts. The first explores differentials in healthcare expenditures and the disproportionate burden of increasing healthcare costs across income, racial/ethnic, and demographic groupings. Second, the availability and accessibility of resources will be assessed through the prevalence and distribution healthcare insurance. However, insurance does not always ensure access to quality services. The differential quality of services provided for various sub-groups will therefore be examined in the last part.

Expenditures

As it stands, the $6,697 per capita health expenditure is very unevenly distributed amongst the US population where 10% of the population accounts for 64% of the healthcare expenditures (Zuvekas and Cohen, 2007).

Table 3:

Average Expenditures And Distribution By Type Of Expenditure For The U.S. Civilian Noninstitutionalized Population, By Percentile Rank Of Total Health Expenditures, 1996 And 2003

	Top 1%	Top 2%	Top 5%	Top 10%	Top 25%	Top 50%	Bottom 50%	Total
Average spent ($ 2003)								
1996	64,097	44,306	25,637	16,025	8,066	4,480	139	2,308
2003	62,660	50,804	30,293[a]	19,709[a]	10,463[a]	5,956[a]	210[a]	3,082[a]
Percent of total by type of expense								
Inpatient stays								
1996	73%	69%	61%	54%	44%	40%	0%	39%
2003	73	68	58	50	40[b]	35[a]	0	34[a]
Rx drugs								
1996	3	4	5	7	10	12	19	12
2003	5[a]	7[a]	11[a]	14[a]	18[a]	20[a]	21[a]	20[a]
Ambulatory treatment								
1996	23	26	31	34	37	38	48	39
2003	20	24	29	32	35	36	47	36
Other expenses								
1996	1	2	3	5	8	10	33	11
2003	1	1	3	4[b]	7	9	32	10[b]

SOURCE: Authors' calculations from the 1996 and 2003 Medical Expenditure Panel Survey Household Component (MEPS-HC) Full-Year Public Use Files.

NOTE: Significance tests were performed using a balanced repeated replication (BRR) method, which accounts for the complex design of the MEPS survey.

[a] Difference between 1996 and 2003 significant at the .05 level.

[b] Difference between 1996 and 2003 significant at the .10 level.

Source: Zuvekas and Cohen, 2007

As illustrated in the previous section, health expenditures are shared between government resources (Medicaid and Medicare), employer contributions, and households. The rapidly increasing healthcare costs translate into differential burdens for the different contributors. While Medicaid and Medicare is expanding and employer contributions to healthcare premiums are growing (in absolute terms), the increased burden on households is perhaps the heaviest. This is due in part to the disproportionate ability of certain households to buffer the impact of rising costs.

In a recent analysis of the Medical Expenditure Panel Survey Banthin and Bernard (2006) demonstrate that nearly one-quarter of Americans below the federal poverty level (24%) in 2003 had health expenditures that exceeded 20% of their disposable income. Furthermore, while

increasing expenditures affected all the income groups, those below the poverty bore the largest impact (Table 4).

Table 4: Prevalence of High Family Out-of-Pocket Burdens by Poverty Status Among the Nonelderly Population, 1996 and 2003*

Poverty Status	Population (× 1000)	Persons With Total Family Burden, % (SE)†		Persons With Family Health Care Services Burden, % (SE)‡	
		>10% of Disposable Income	>20% of Disposable Income	>10% of Disposable Income	>20% of Disposable Income
Poor (<100% of federal poverty line)					
1996	34 212	25.9 (1.5)	17.7 (1.3)	20.2 (1.3)	14.1 (1.0)
2003	32 819	33.3 (1.2)§	24.0 (1.1)§	29.0 (1.1)§	20.5 (0.9)§
Near poor/low-income (100% to <200% of federal poverty line)					
1996	43 222	24.1 (1.5)	6.7 (0.8)	9.1 (0.9)	2.5 (0.4)
2003	43 573	23.7 (1.2)	9.9 (0.9)§	10.4 (0.7)	4.5 (0.4)§
Middle-income (200% to <400% of federal poverty line)					
1996	76 863	15.6 (0.9)	3.7 (0.4)	4.5 (0.5)	1.1 (0.2)
2003	79 079	22.7 (1.0)§	6.2 (0.5)§	6.4 (0.5)§	2.0 (0.2)
High-income (≥400% of federal poverty line)					
1996	80 559	7.1 (0.6)	1.5 (0.2)	1.9 (0.2)	0.8 (0.1)
2003	98 434	9.7 (0.5)§	1.6 (0.2)	2.5 (0.2)	0.6 (0.1)

*Data were calculated using Medical Expenditure Panel Surveys (MEPS) data. Standard errors were adjusted to account for the complex design of the MEPS.
†Total burden includes out-of-pocket premiums for private insurance and expenditures on health care services.
‡Health care services burden includes out-of-pocket expenditures on health care services.
§Difference between 1996 and 2003 is statistically significant at $P \leq .05$.

Source: Banthin & Bernard (2006). *Changes in Financial Burden for Healthcare*. JAMA (296). Table 2

Not surprisingly, when disaggregated based on demographic characteristics, the percentage of Americans spending more than 20% of their disposable income on healthcare increased with age. However, there did not appear to be as big a difference between the ethnic/racial groups as there was between income groups.

Table 5: Prevalence of High Family Out-of-Pocket Burdens by Socioeconomic Characteristics Among the Nonelderly Population, 2003*

Characteristics	Population (× 1000)	Persons With Total Family Burden, % (SE)†		Persons With Family Health Care Services Burden, % (SE)‡	
		>10% of Disposable Income	>20% of Disposable Income	>10% of Disposable Income	>20% of Disposable Income
Total	253 905	19.2 (0.5)	7.3 (0.3)	8.5 (0.2)	4.3 (0.1)
Age, y					
1-17§	72 996	18.6 (0.8)	6.7 (0.5)	7.3 (0.4)	3.7 (0.3)
18-34	67 431	14.5 (0.6)‖	5.6 (0.4)‖	6.6 (0.3)	4.1 (0.3)
35-54	84 005	19.5 (0.6)	7.1 (0.4)	8.3 (0.3)	3.8 (0.2)
55-64	29 473	30.6 (1.2)‖	13.5 (0.8)‖	16.5 (0.9)	7.5 (0.6)
Sex					
Male§	126 510	17.8 (0.5)	6.7 (0.3)	7.0 (0.3)	3.8 (0.2)
Female	127 395	20.6 (0.5)	8.0 (0.3)	9.3 (0.3)‖	4.7 (0.2)‖
Race/ethnicity					
Hispanic§	38 518	14.7 (0.8)	6.0 (0.5)	7.7 (0.4)	4.2 (0.4)
Black, non-Hispanic	32 234	16.4 (0.9)	7.5 (0.6)‖	8.1 (0.5)	5.8 (0.5)
White/other	183 153	20.6 (0.6)‖	7.6 (0.4)‖	8.7 (0.3)	4.0 (0.2)
Residing in metropolitan statistical area					
No§	45 309	24.0 (1.2)	9.9 (0.8)	11.9 (0.9)	5.8 (0.5)
Yes	208 596	18.2 (0.5)‖	6.8 (0.3)‖	7.8 (0.2)‖	3.9 (0.2)‖

*Data were calculated using Medical Expenditure Panel Surveys (MEPS) data. Standard errors were adjusted to account for the complex design of the MEPS.
†Total burden includes out-of-pocket premiums for private insurance and expenditures on health care services.
‡Health care services burden includes out-of-pocket expenditures on health care services.
§Reference group.
‖Difference from the reference group is statistically significant at $P \leq .05$.

Source: Banthin & Bernard (2006). *Changes in Financial Burden for Healthcare*. JAMA (296). Table 3

As for the distribution of healthcare expenditures, those who spent more than 20% of their disposable incomes spent 50% of this on prescription medicines and 23% on ambulatory care visits.

Table 6: Mean Per Capita Out-of-Pocket Health Care Expenditures by Service Type Among the Nonelderly Population by Total Burdens, 2003*

Total Burden	Population (× 1000)	Total Expenditures on Health Care Services, $	Out-of-Pocket Expenditures, $ (% of Total Expenditures)				
			Total	Hospital Stays	Ambulatory Care Visits†	Prescription Medication‡	All Other Services§
Total nonelderly population	253 905	2384	477	20 (4)	134 (28)	189 (39)	134 (28)
<20% of disposable income	235 249	2113	394	11 (3)	117 (29)	143 (36)	123 (31)
≥20% of disposable income	18 656	5794‖	1528‖	129 (8)‖	357 (23)‖	767 (50)‖	275 (18)‖

*Data were calculated using Medical Expenditure Panel Surveys (MEPS) data. Standard errors are available from the authors.
†Ambulatory care visits include office-based clinician visits, outpatient hospital visits, and emergency department visits.
‡Prescription medications include diabetes care supplies.
§All other services include home health care visits, dental visits, and other medical expenditures such as glasses, ambulance services, orthopedic items, hearing devices, prostheses, and medical equipment.
‖Difference from the low-burden group (total burden <20% of disposable income) is statistically significant at $P \leq .05$.

Source: Banthin & Bernard (2006). *Changes in Financial Burden for Healthcare*. JAMA (296). Table 6

Health Insurance Coverage

According to the 2006 National Healthcare Disparities Report, when controlling for income, poor or near poor African Americans were more likely than whites to have any form of healthcare coverage in 2004. The differences between the racial groups, however, largely disappeared at the higher end of the income spectrum. This may be explained by higher rates of accessing public resources among lower income African Americans than their white counterparts.

If we look at the type of coverage, Hispanics up to age 65 were most likely to be uninsured (34%), African Americans were most likely to have Medicaid or other public healthcare coverage

(28%), and non-Hispanic whites were most likely covered by employer insurance (69%). For Americans whose family income was below 200% of the federal poverty level, the proportions accessing Medicaid or other public resources increased, uninsurance increased and employer provided healthcare coverage decreased: 45% of African Americans, 33% of Hispanics and 32% of non-Hispanic whites had Medicaid or public healthcare coverage.

Figure 64:

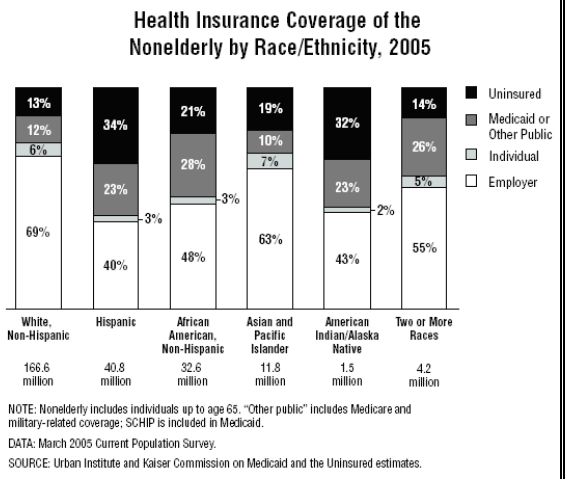
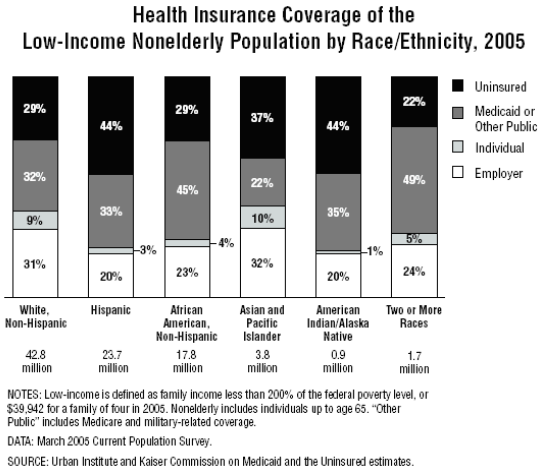


Figure 65:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007*, figure 16 and 17

Medicaid and Medicare

Of the 35 million non-elderly Medicaid beneficiaries in 2005, 45% where non-Hispanic whites, 25% were Hispanic and 23% were African American. Hispanic children are more than twice as likely to receive Medicaid as white children and African Americans are more likely than Hispanics or whites to receive Medicaid across the age and gender groups.

Figure 66:

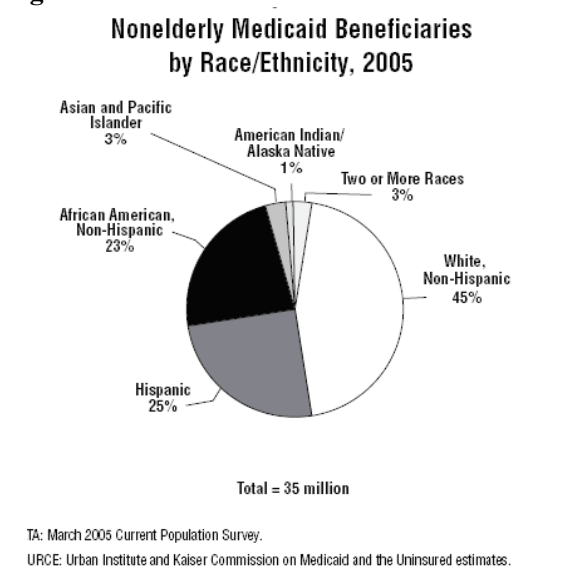
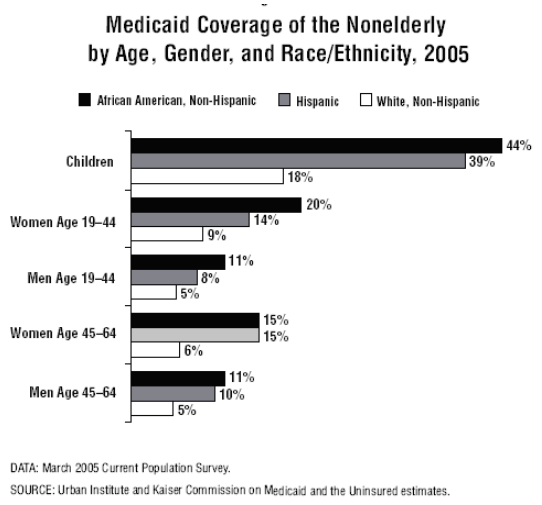


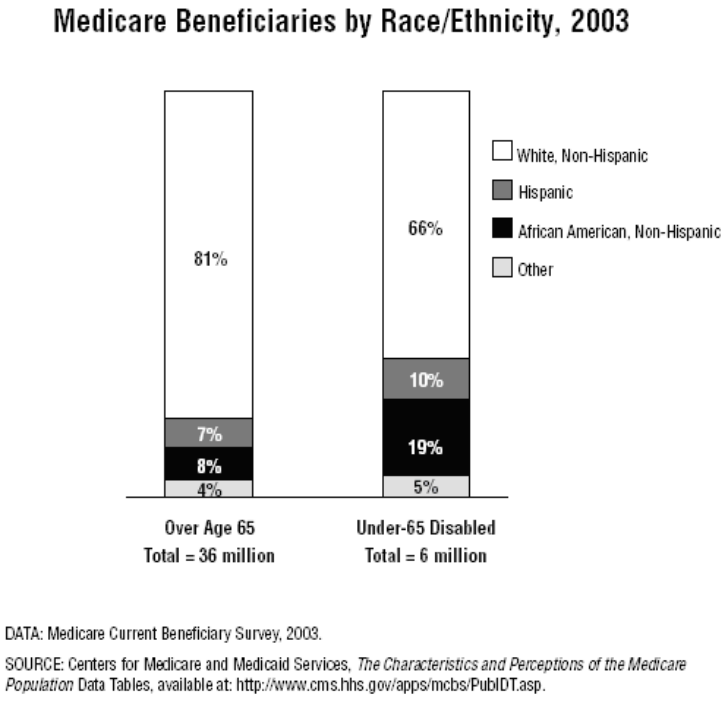
Figure 67:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 19 and 20

Of the Medicare beneficiaries, the large majority are elderly (86%) while the remainder are under 65 and disabled. Among the elderly, 81% are white (29.2 million), 8% African American (2.9 million) and 7% Hispanic (2.5 million). This is nearly twice as much coverage for whites as under Medicaid. Among the 6 million disabled beneficiaries, nearly two-thirds were white (4 million), one-fifth African American (1.1 million), and one-tenth Hispanic (0.6 million).

Figure 68:

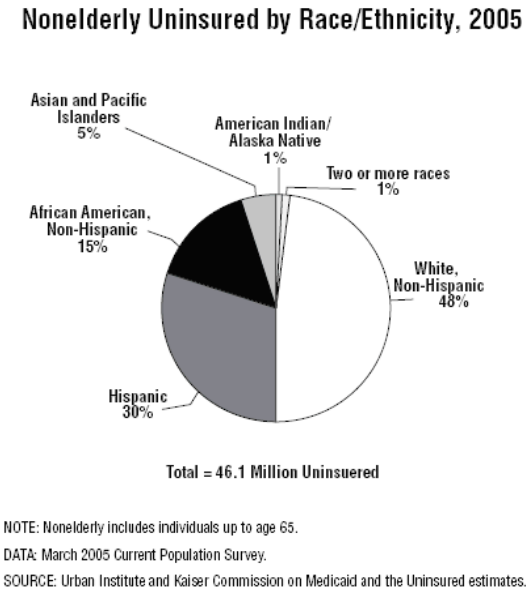


Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 21

Uninsured and Underinsured

According to US Census figures, 46.6 million Americans were uninsured in 2005, 8.3 million of whom were under the age of 18. Of the uninsured, 22.1 million were non-Hispanic Whites, 14.1 million were Hispanic, and 7.2 million were Black. Thus, while nearly half of the non-elderly uninsured are white (48%), 30% are Hispanic, and 15% African American (figure 69).

Figure 69:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 22

The relative distribution of the uninsured was heavily weighted towards Hispanics (32.6% of this population) and American Indians/Alaskan Natives (29.9%) followed by Native Hawaiians/Pacific Islanders (21.8%) and Blacks (19.5%). This suggests that nearly one-third of the Hispanic population and one in five Blacks in the US lacks healthcare coverage. Furthermore, foreign-born Americans were 2.5 times more likely to be uninsured the native-born Americans[43].

Figure 70:

People Without Health Insurance Coverage by Race and Hispanic Origin Using 3-Year Average: 2003 to 2005

(Numbers in thousands. People as of March of the following year)

Race[1] and Hispanic origin	3-year average 2003–2005[2]			
	Number		Percentage	
	Estimate	90-percent confidence interval[3] (±)	Estimate	90-percent confidence interval[3] (±)
All races	45,615	359	15.7	0.1
White	34,590	320	14.8	0.1
White, not Hispanic	21,844	260	11.2	0.1
Black	7,126	173	19.5	0.5
American Indian and Alaska Native	681	56	29.9	2.1
Asian	2,167	96	17.7	0.8
Native Hawaiian and Other Pacific Islander	139	26	21.8	3.6
Hispanic origin (any race)	13,621	225	32.6	0.5

[1] Federal surveys now give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White *and* American Indian and Alaska Native or Asian *and* Black or African American, is available from Census 2000 through American FactFinder. About 2.6 percent of people reported more than one race in Census 2000.

[2] The 2004 data have been revised to reflect a correction to the weights in the 2005 ASEC. The estimates also reflect improvements to the algorithm that assigns coverage to dependents.

[3] A 90-percent confidence interval is a measure of an estimate's variability. The larger the confidence interval in relation to the size of the estimate, the less reliable the estimate. For more information, see "Standard Errors and Their Use" at <www.census.gov/hhes/www/p60_231sa.pdf>.

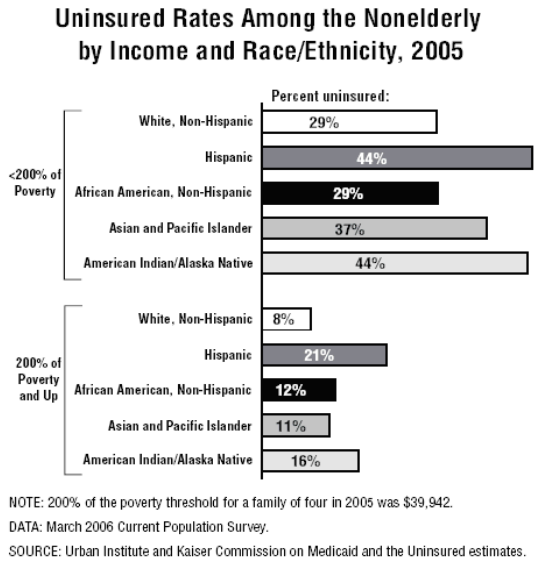
Source: U.S. Census Bureau, Current Population Survey, 2004 to 2006 Annual Social and Economic Supplements.

US Census, figure 9

[43] US Census bureau

For Americans with household incomes below 200% of the federal poverty line, the proportion uninsured increases differentially across the race/ethnic groups: 44% of the Hispanic population, 44% of the Native American/Alaskan Natives, 29% of African Americans and 29% of whites with household incomes below 200% of federal poverty level are uninsured (figure 71). The lack of more detailed information on the depth of poverty experienced by the various racial/ethnic groups impedes our ability to discern whether the differences observed are indeed racial or have an income-based explanation.

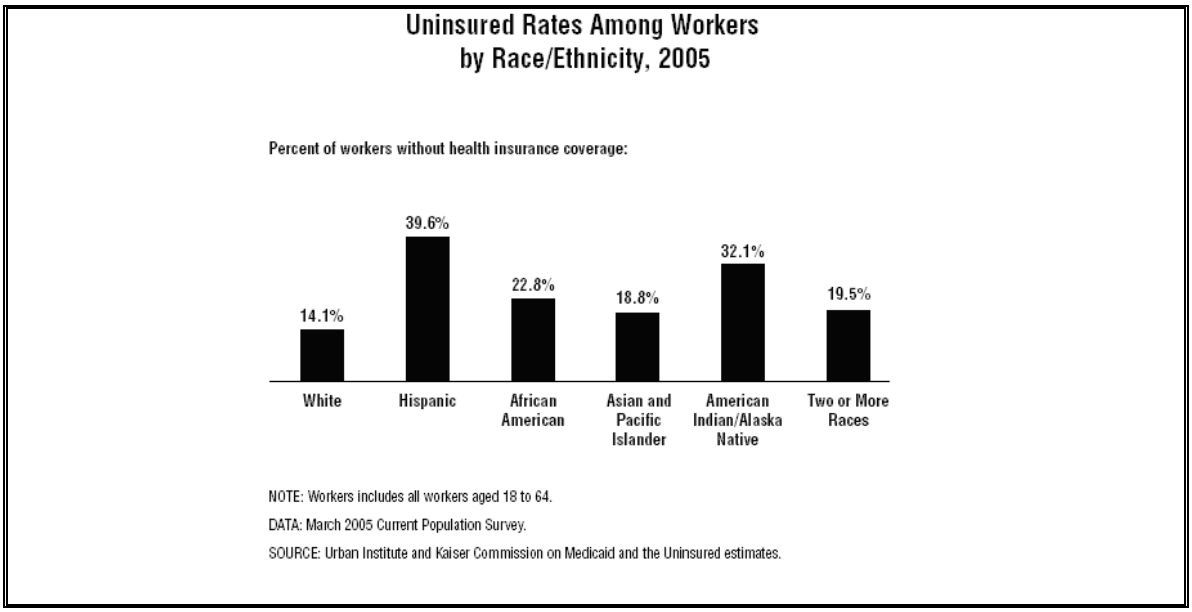
Figure 71:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 23

According to 2005 census figures, 24.4% of Americans with household incomes less than $25,000 were uninsured compared to only 8.5% of those with incomes above $75,000. Furthermore, **27.3 million working Americans lacked healthcare coverage in 2005, an increase of 800,000 since 2004.** Nearly one out of every five full-time workers between the ages of 18 and 64 (17.7%) was uninsured, close to one in every four part-time workers (23.5%) and almost one in three unemployed Americans (27.3%). Approximately 21.5 million full-time workers were uninsured in 2005 compared to 20.5 million in 2004. This suggests that nearly half (46%) of uninsured Americans were working full-time at least part of the year. Disaggregating by race/ethnicity reveals that white workers were least likely to be uninsured (14.1%) while 36.6% of Hispanic workers, 32.1% of Native American/Alaska Native workers, and 22.8% of African American workers lacked health insurance (figure 72).

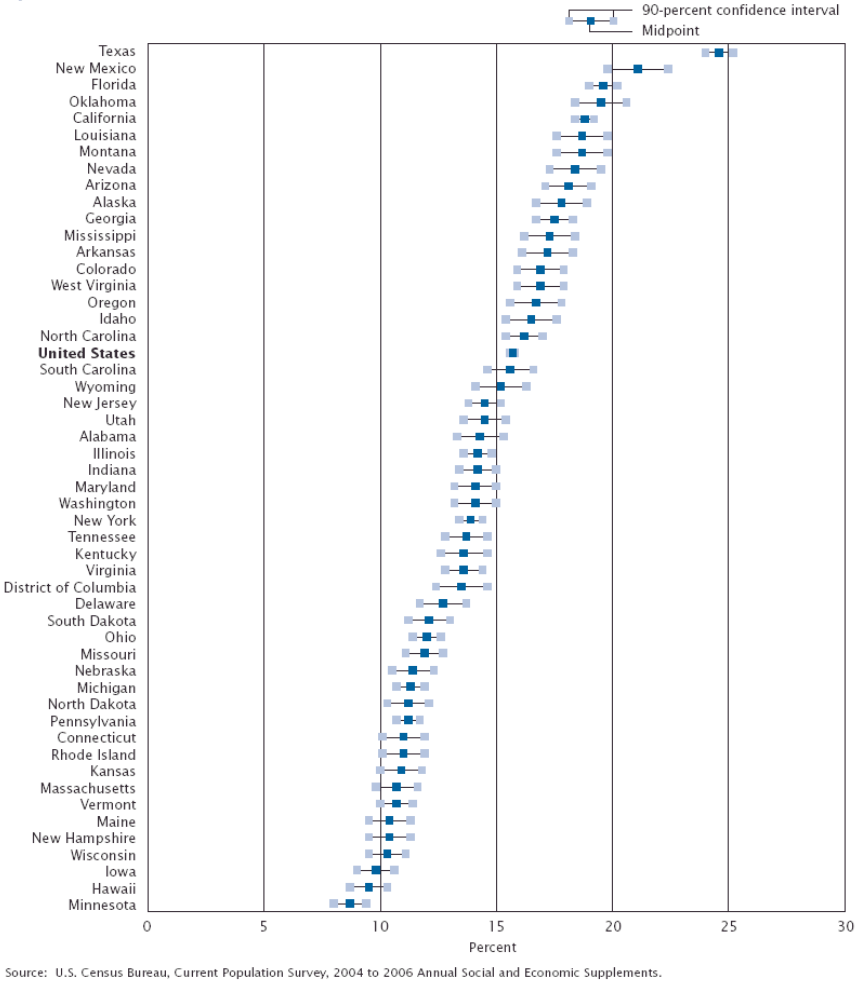
Figure 72:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 24

There are also geographic differences with respect to health insurance coverage with Texas having the highest percent of its population uninsured (nearly 25%) and Minnesota the least (less than 10%) (figure 73). The different healthcare policies and resource allocation schemes within each State may explain the differences.

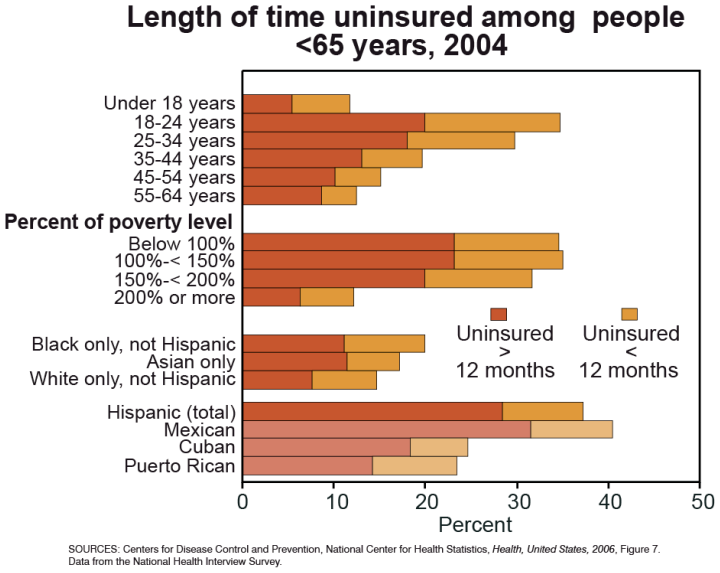
Figure 73:



Source: US Census Bureau

Given that many Americans transition in and out of health insurance with employment or eligibility for Medicaid and/or Medicare, the duration of time without insurance adds a layer of depth to our analysis. It is interesting to note that within all the different categories, more than half of the uninsured are uninsured for more than 12 months. This suggests that un-insurance, when present, is more likely to be long-term than transient. The percentage of the population uninsured for more than 12 months decreases between the ages of 18 to 64 with more than 20% of 18-24 year-olds remaining uninsured for this period. With respect to income, almost 25% of those with incomes below 150% of the federal poverty level went uninsured for more than 12 months. This decreased with increasing income. Among the ethnic/racial groups, it is the Hispanics who are most likely to remain uninsured for more than a year, especially Mexicans (figure 74).

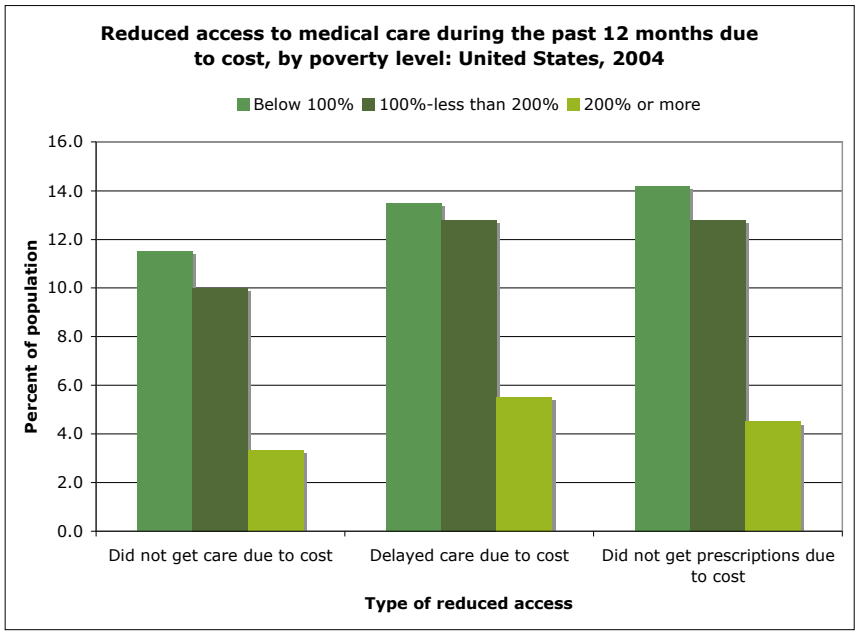
Figure 74:



Source: Health, United States 2006 figure 7

Since the uninsured are more likely to avoid accessing healthcare or delay utilization and are less likely to benefit from preventive services and screenings, they risk worse health and higher healthcare costs. Furthermore, the healthcare received among the uninsured is often reported to be of poorer quality. The subsequent financial and health costs then translate into an even higher burden which impacts on various aspects of the individual life as well as that of their families and even communities. According to the 2006 National Healthcare Disparities report, medical expenses account for up to half of the personal bankruptcy filings.

Figure 75:



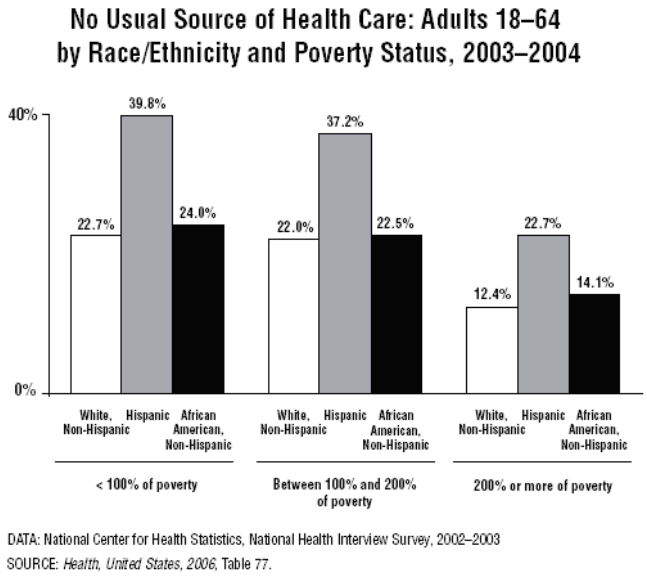
Source: Health, United States 2006 table 78

Quality of Care

One of the main criticisms of the US healthcare system is its inefficiency and suboptimal quality. According to the 2006 National Healthcare Quality Report, quality includes effectiveness, patient safety, timeliness, and patient centeredness. The level of quality is, however, highly variant across ethnic/racial, economic, and geographic lines.

The availability of a usual primary care provider is one means by which quality of care may be assessed. Having a usual primary care provider suggests more appropriate, better coordinated, and higher quality care for the patient and translates into cost-savings for the payer. According to data from the National Health Interview Survey (2002-2003), Hispanics were least likely to have a usual primary care provider compared to whites or African Americans across income groups. Whether the household income was below 100% of the federal poverty level or between 100%-200% did not appear to make much difference in the availability of a usual healthcare provider. However, all racial groups with household incomes above 200% of the FPL were more likely to have a primary healthcare provider than their lower income counterparts. The availability of a usual healthcare provider varied from 87.6% for whites with incomes above 200% of the FPL to 60.2% for Hispanics with household incomes below 100% of FPL.

Figure 76:



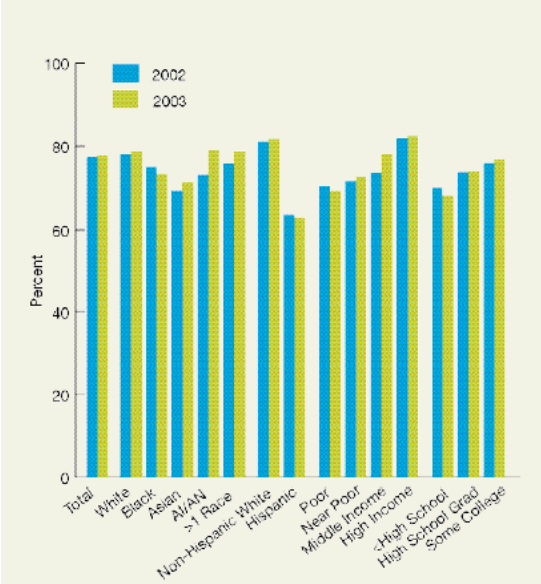
Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 27

Analysis conducted for the National Healthcare Disparities report demonstrated that after controlling for gender, age, race, ethnicity, income, education, and residence, " Blacks were 12% and Asians were 28% less likely than Whites, Hispanics were 39% less likely than non-Hispanic Whites, poor individuals were 36% less likely than high income individuals, and individuals with no health insurance were 73% less likely than individuals with private insurance to have a usual primary care provider."[44]

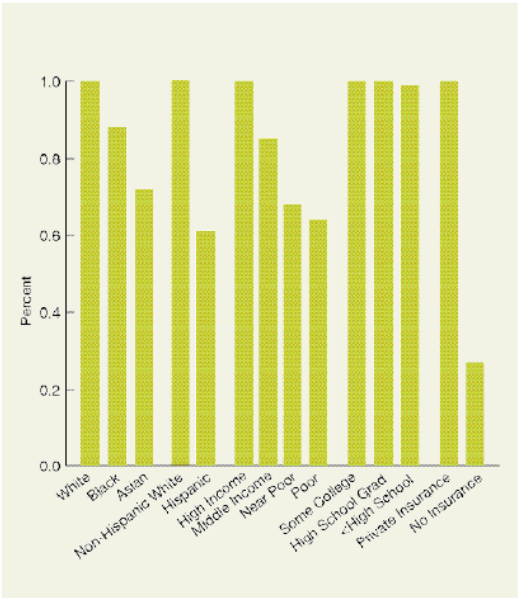
[44] 2006 National Healthcare Disparities Report p.116

Figure 77: Usual Primary Care Provider (2002-2003)

Distribution by categories



Adjusted Odds Ratios



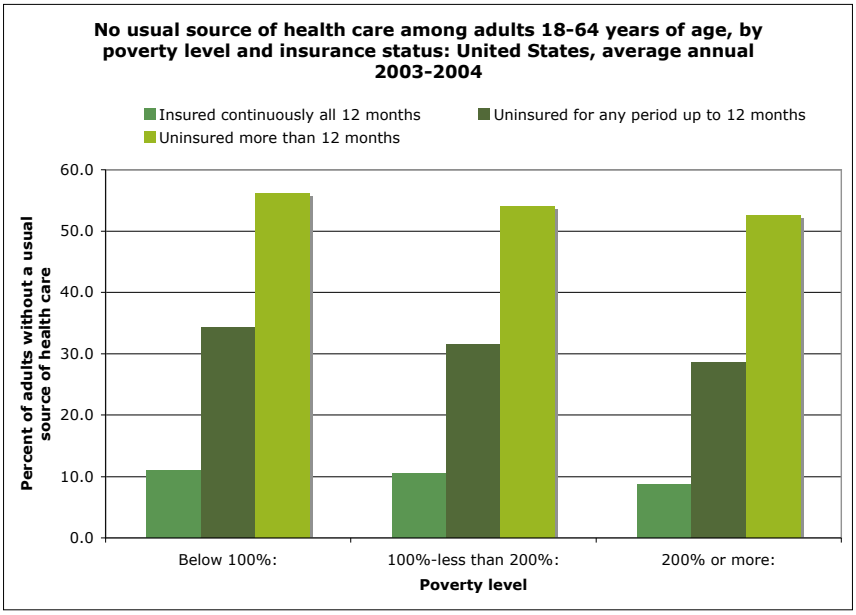
Reference population: Analyses by race, ethnicity, and income performed for civilian noninstitutionalized persons of all ages. Analyses by education performed for civilian noninstitutionalized persons age 18 and over. For Odds Ratios, the reference population was the civilian noninstitutionalized population ages 18-64.

Note: Adjusted odds ratios are calculated from logistic regression models controlling for race, ethnicity, income, education, age, gender, insurance, and residence location. White, non-Hispanic White, high income, and some college are reference groups with odds ratio=1; odds ratios <1 indicate that group is less likely to receive service than the reference group.

Source: 2006 National Healthcare Disparities Report, figures 3.6 & 3.7(Medical Expenditure Panel Survey, 2002 and 2003)

Nevertheless, much of the variation in availability of a usual source of healthcare among the income groups appears to be to insurance coverage. While there continue to be subtle differences, having continuous insurance coverage is, not surprisingly, the best way to ensure a usual source of healthcare.

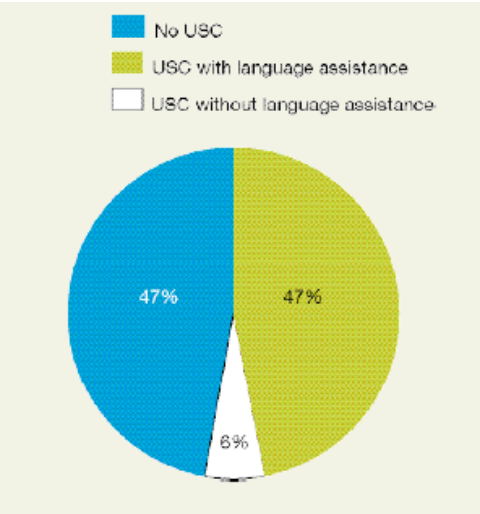
Figure 78:



Source: Health, United States 2006 table 77

In addition to having a usual healthcare provider, having one with whom the patient can effectively communicate is imperative for good quality care. According to the National Healthcare Disparities Report, of Americans with limited proficiency in English, 47% had no usual source of healthcare and 47% had a source of healthcare which provided language assistance. Relatively few, only 6%, had a usual source of care without language assistance.

Figure 79: Adults with limited English proficiency with and without a usual source of care who offers language assistance, 2003



Key: USC = usual source of care.
Reference population: Civilian noninstitutionalized population age 18 and over.
Note: Language assistance includes bilingual clinicians, trained medical interpreters, and informal interpreters (e.g., bilingual receptionists).
Source: 2006 National Healthcare Disparities Report, figures 4.19 (Medical Expenditure Panel Survey, 2003)

This highlights the growing need for availability of healthcare resources that cater to the diversity of the US population. According to the Bureau of Labor Statistics, as of 2005, a large majority of physicians (74.1%) are white, 14.1% are Asian, 4.3% are Hispanic, and 3.9% are African Americans[45]. Furthermore, of the practicing physicians in 2004, more than one in four (26%) were trained in schools outside the United States.

In sum, the National Healthcare Disparities Report suggested that according to 12 measures of quality, the poor had lower quality of care than their richer counterparts. They concluded that poor individuals were "48% more likely to receive poorer quality of care than high income individuals."[46] Furthermore, according to their 8 measures of access, they found that the poor had significantly less access to healthcare than the non-poor. They concluded that the poor were "…2.4 times as likely to have worse access as high income individuals."[47]

Geographically, the 2006 National Healthcare Quality Report, indicated that although healthcare quality was generally improving, there were some stark and growing inequalities across States. They reported that compared to the best performing State, the worst performing State had "over 8 times as many nursing home residents in physical restraints; over 6 times as many hemodialysis patients inadequately dialyzed; over 5 times as many asthma hospitalizations among children; over 4 times as many women without early prenatal care."[48]

Inequalities in Health/Risk Behaviors

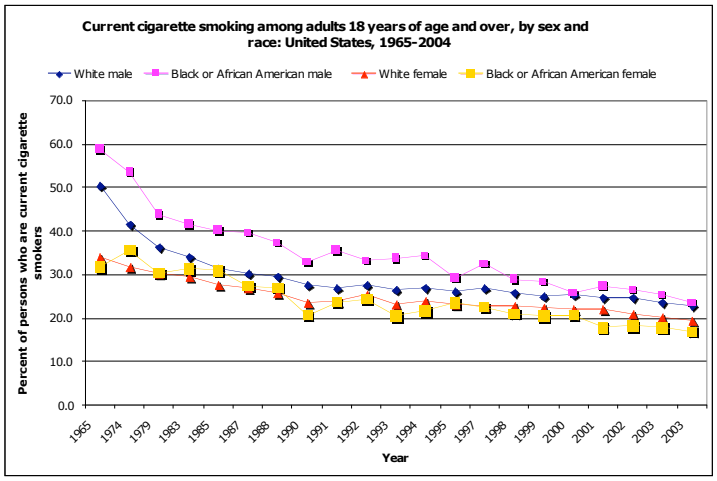
In addition to disparities in access to healthcare services and the differential quality of those services once accessed, inequalities also manifest in risk-taking and health-protecting behaviors. For example, smoking, and behaviors contributing to the rise in obesity are some of the main risk factors while preventive healthcare visits and use of healthcare screenings help protect against some of the leading causes of morbidity and mortality.

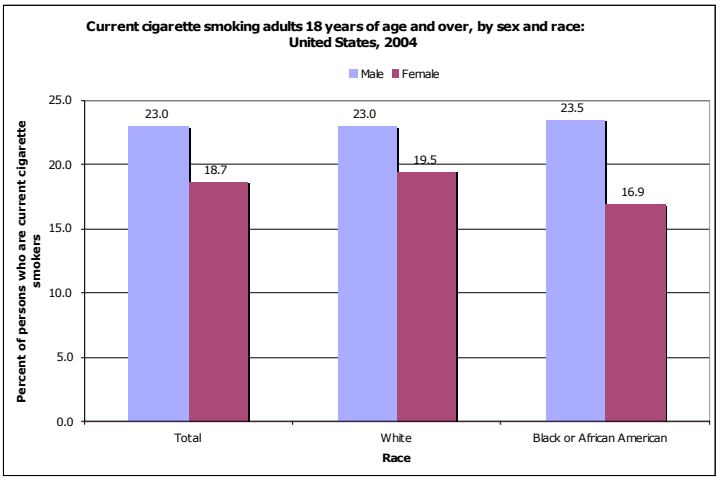
Risk-Taking Behaviors

Smoking has been decreasing for males, females, blacks and whites alike but the rate of decrease has been most remarkable among black males. Currently, black males have the highest rate of smoking (23.5%), just slightly higher than that of white males (23%), and black females the lowest (16.9%). The rates are converging and in general one in five Americans is a smoker.

Figure 80:	**Figure 81:**

[45] National Healthcare Disparities Report 2006, p. 31
[46] National Healthcare Disparities Report 2006. p. 155
[47] National Healthcare Disparities Report 2006. p. 155
[48] National Healthcare Quality Report 2006

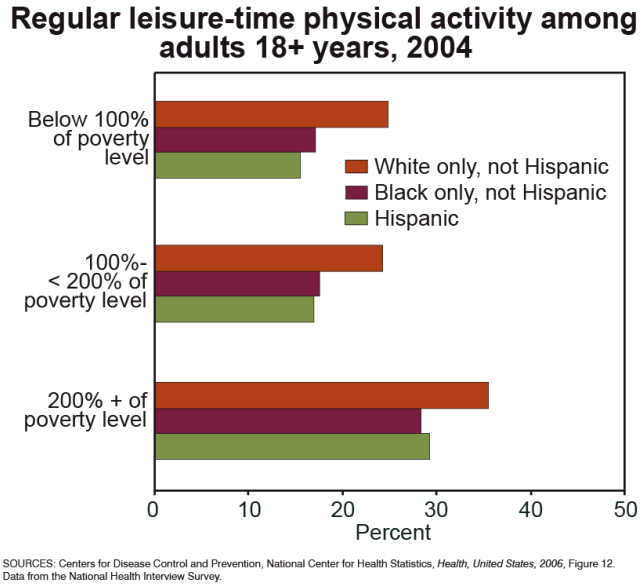




Source: Health, United States 2006 table 63

Leisure time activity among adults, which along with diet contributes to the risk of overweight and obesity, is highest among high income whites and lowest among Hispanic poor. However, overweight and obesity is highest among African Americans (67.9%).

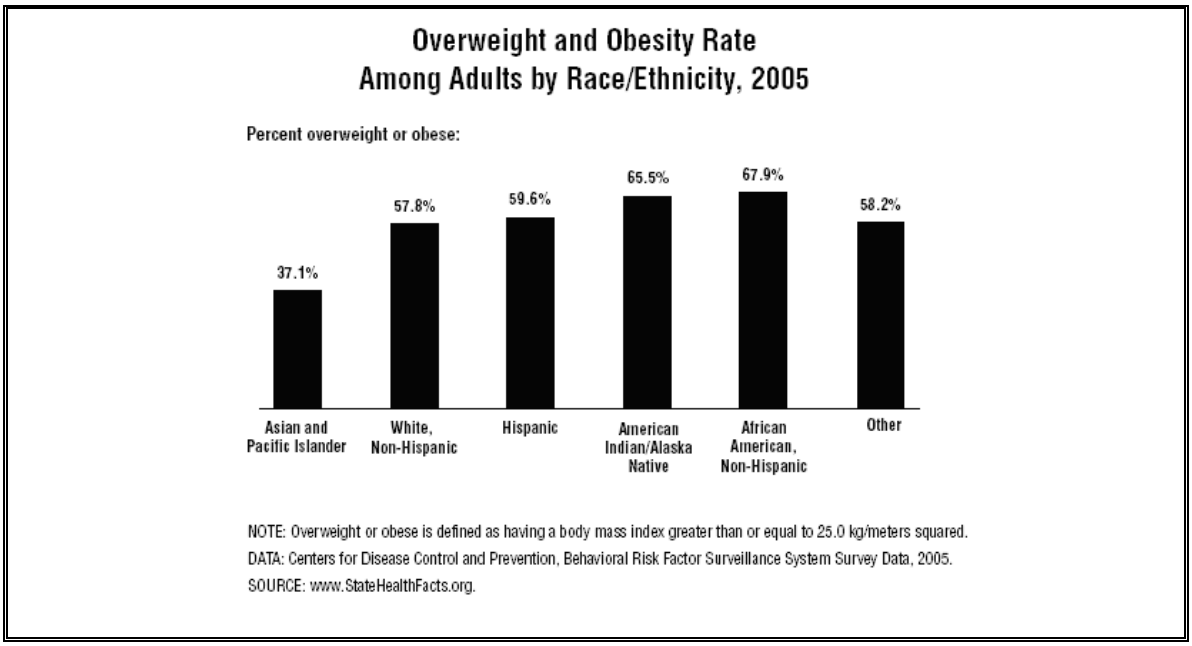
Figure 82:



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, *Health, United States, 2006*, Figure 12.
Data from the National Health Interview Survey.

Source: Health, United States, 2006 figure 12

Figure 83:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 15

Despite higher levels of overweight and obesity, African Americans are less likely to have high serum cholesterol levels than whites and there does not appear to be much of a gender difference. However, the poor are more likely to have high cholesterol levels than the non-poor and they appear to be on an upward trajectory in contrast to the non-poor and near poor.

Figure 84:

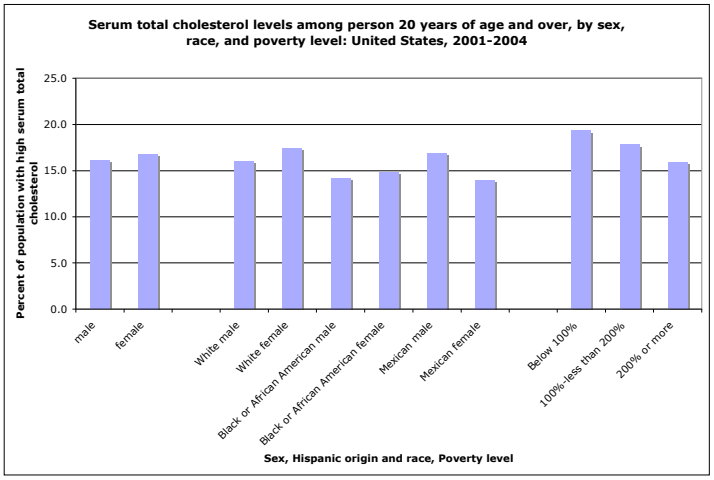
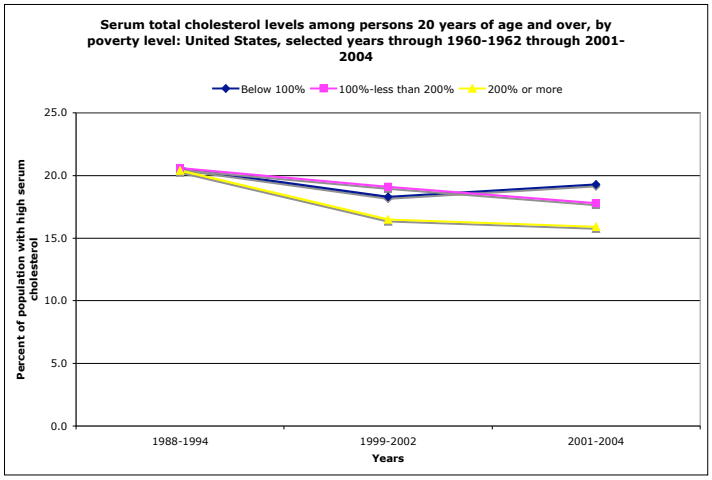


Figure 85:



Source: Health, United States 2006 table 70

On the other hand, hypertension- which is influenced by smoking, stress and obesity- is highest among African Americans, regardless of gender, than that of whites or the poor. More than one in four African Americans has hypertension compared to less than one in five of the poor.

Figure 86:

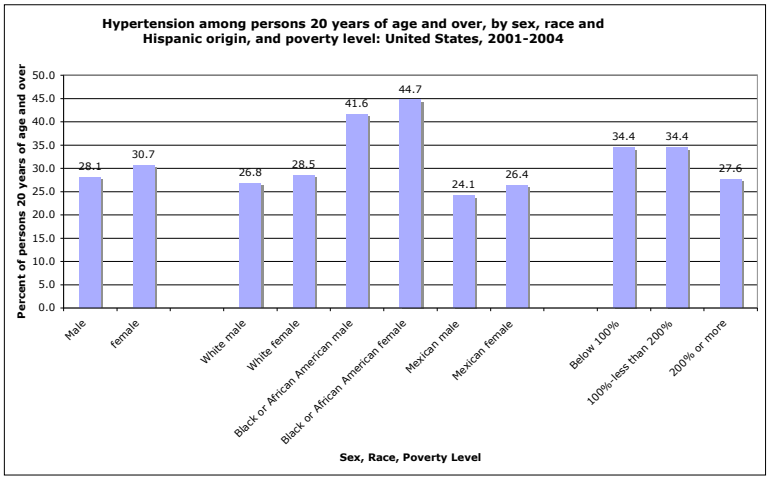
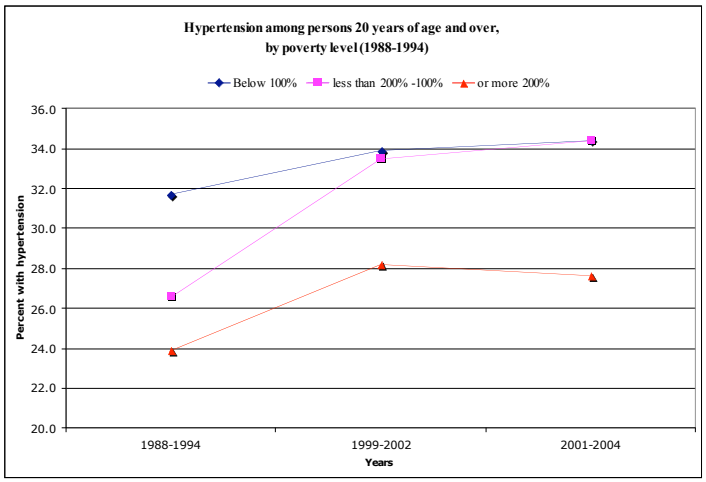


Figure 87:

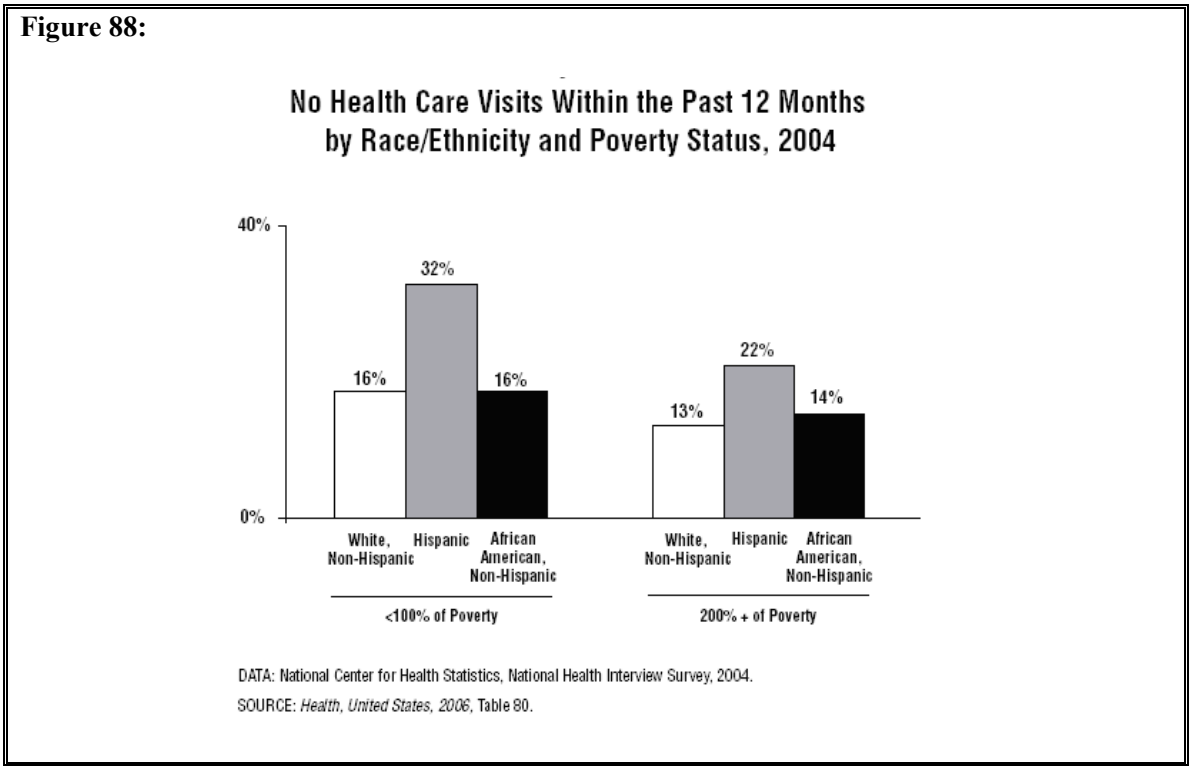


Source: Health, United States 2006 table 69

Protective Behaviors

Utilization of healthcare resources and preventive screenings can significantly reduce morbidity, decrease its severity and avoid preventable mortality. However, many Americans do not access preventive resources. Once again we see both income and racial/ethnic disparities in this respect. For example, while Americans below 100% of the FPL are less likely to have had a visit to a healthcare provider in the past year, Hispanics are two times less likely than whites or black in this income groups.

Figure 88:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 29

It is also interesting to note that the poor were more likely than the non-poor to either have no healthcare visits or more than ten visits in the past year. In particular, the poor more often utilize emergency rooms than their near-poor and non-poor counterparts. This can be explained, in part, by their lack of a usual healthcare provider.

Figure 89:

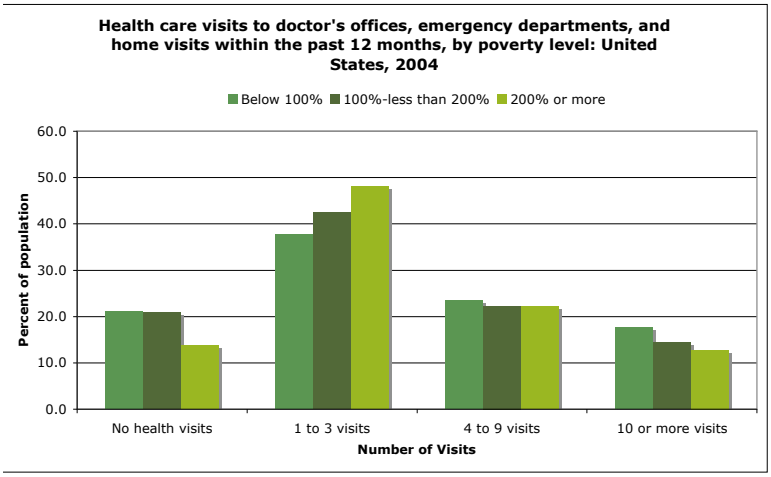
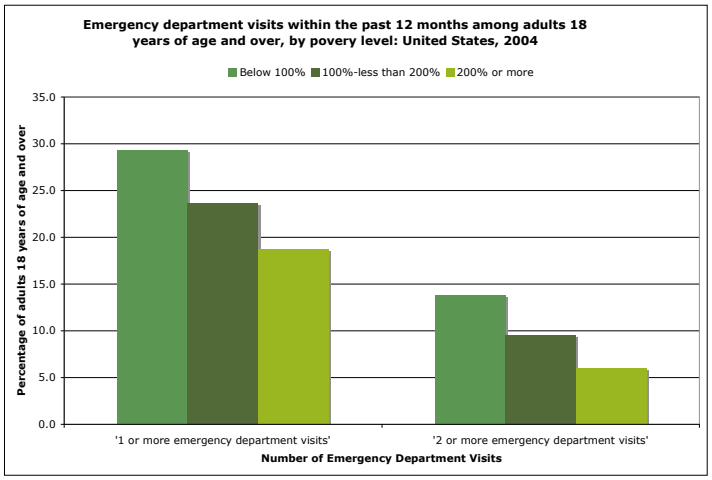


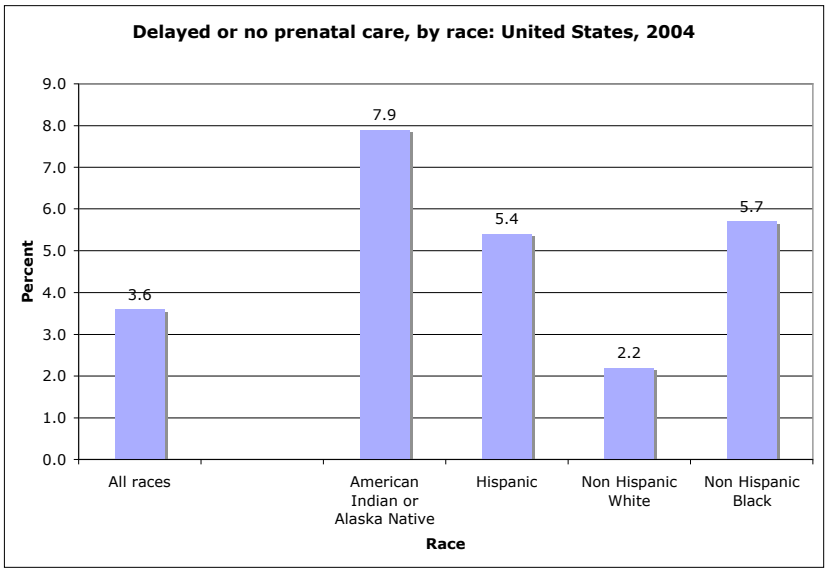
Figure 90:



Source: Health, United States 2006 table 80

Furthermore, while the majority of American women are able to access prenatal care in the first or second trimester of their pregnancy, there are distinct racial and economic patterns to no or late access.

Figure 91:



Source: Health, United States 2006 table 7

Teenage pregnancy, which poses risks for both the mother and the child, has been decreasing across racial groups and the ethnic/racial disparities have been converging. Nevertheless, the rates are still higher among African American and American Indian/Alaskan Natives than whites.

Figure 92:

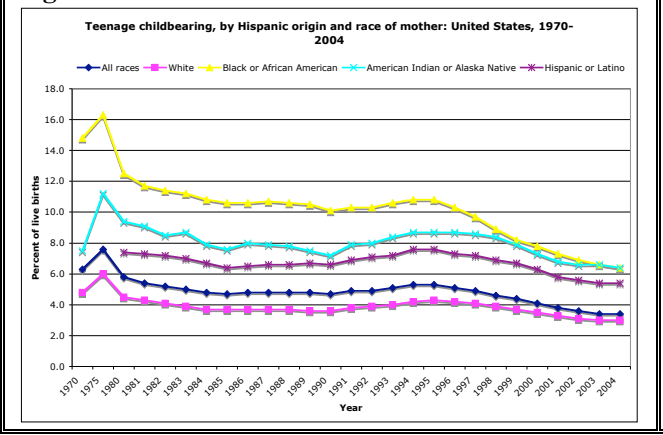
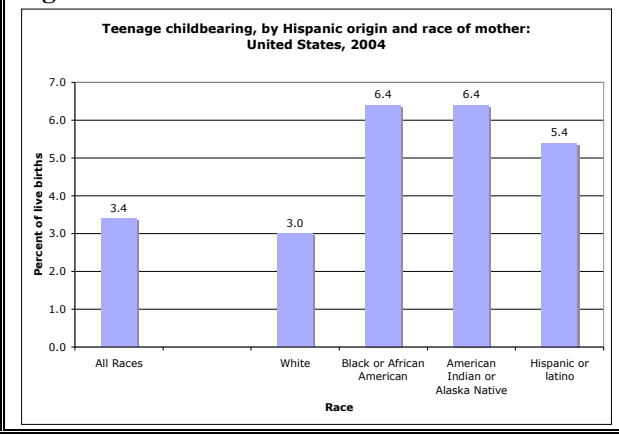
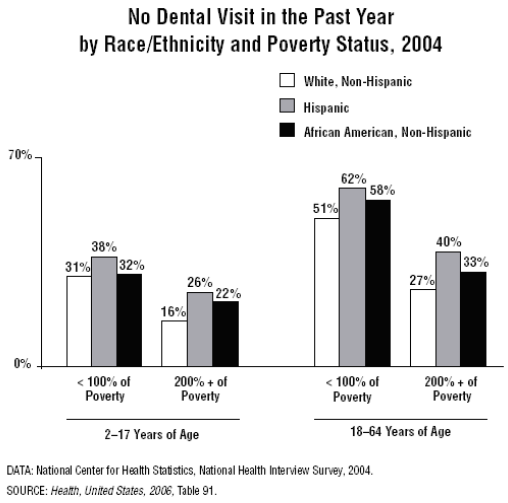


Figure 93:



With respect to oral health, Hispanics were once again least likely and whites most likely to access dental care in the past year compared to other racial/ethnic groups across poverty levels and age groups. Despite public health recommendations, more than half of non-elderly adults below 100% of the FPL (up to 62% for Hispanics) failed to see a dentist in the past year.

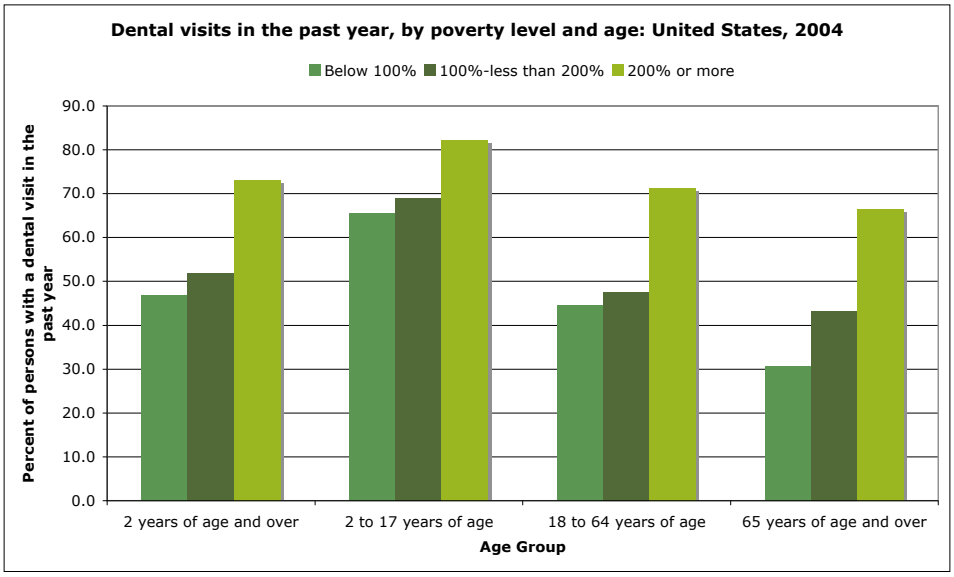
Figure 93:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 33

Figure 94 demonstrates that the most remarkable distinction between the poor and non-poor is for those aged 65 and older. Poor elderly are least likely to have accessed dental care in the past year.

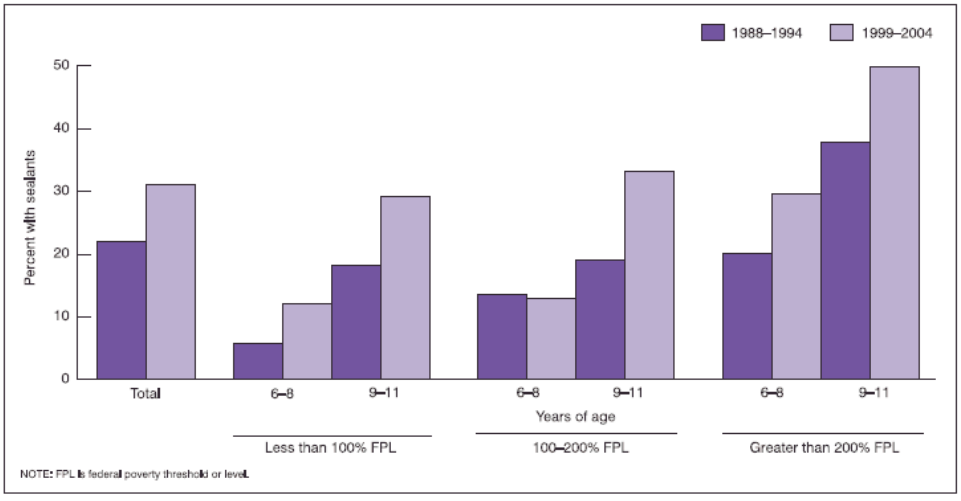
Figure 94:



Source: Health, United States 2006 table 91

Another measure of preventive dental care is dental sealants which protect permanent teeth from cavities. While the prevalence of dental sealants has been increasing there remains a clear economic gradient with the non-poor more likely to have sealants than the poor. While nearly half of the non-poor children 9-11 years old are protected from dental caries, less than one-third of their poor counterparts have sealants.

Figure 95:



Source: Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. National Center for Health Statistics. Vital Health Stat 11(248). 2007. p.6

The use of mammography to screen for breast cancer has been demonstrating positive trends albeit still more prevalent among the non-poor without significant racial differences.

Figure 96:

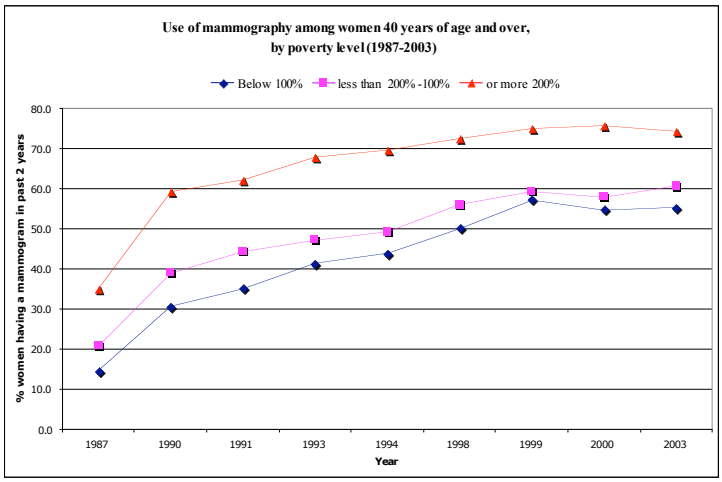
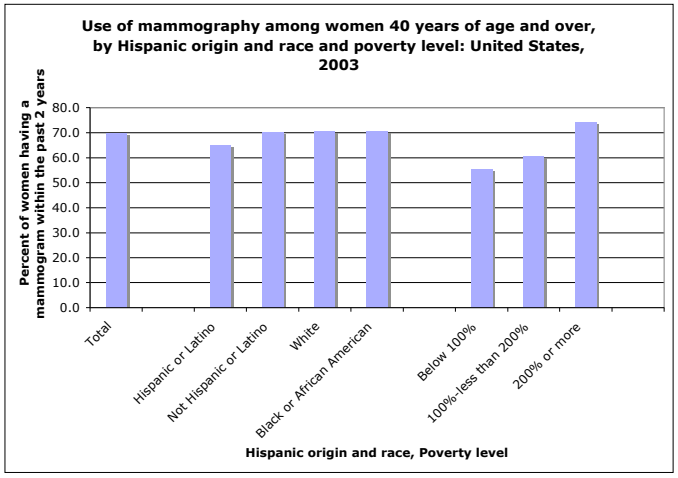


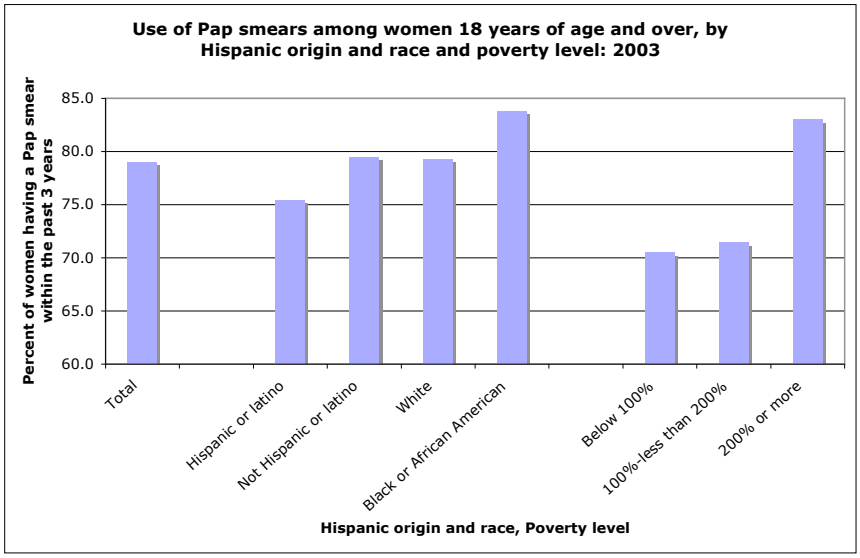
Figure 97:



Source: Health, United States 2006 table 84

The use of pap-smears, however, demonstrates both racial and income differentials. Hispanics women were least likely and black women mostly likely to have had a pap smear.

Figure 98:



Source: Health, United States 2006 table 85

Unfortunately, childhood vaccinations also demonstrate both income and racial/ethnic variations with black children below the poverty level having the lowest rate of coverage and white children at or above the poverty level the highest. It is interesting to note that while the trajectory for coverage of blacks follows that of the low income group that of the whites closely follows that of their higher income counterparts.

Figure 99:

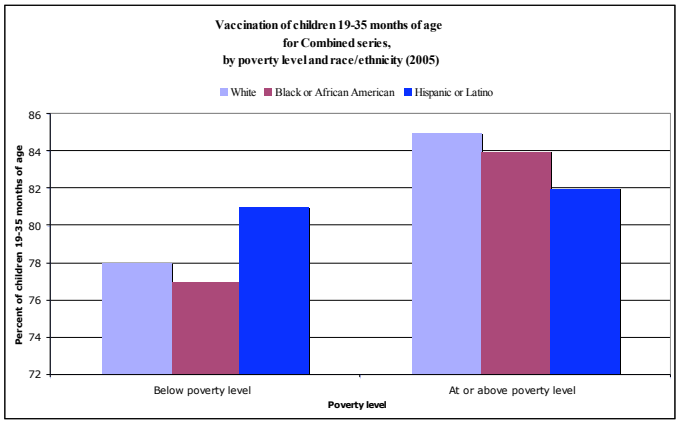
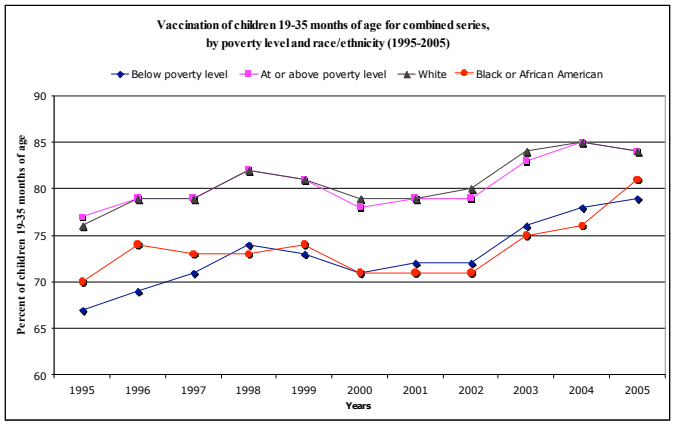


Figure 100:



Source: Health, United States 2006 table 81

Inequalities in Health Outcomes

Increases in life expectancy at birth have been observed across race and gender. However, there appear to be pervasive inequalities across both categories. Women tend to have higher life expectancies than men and whites higher than blacks. Indeed there is a gap of more than ten years between black men whose life expectancy at birth in 2004 was estimated to be 69.5 years and white women with an estimated of 80.8 years of life.

Figure 101:

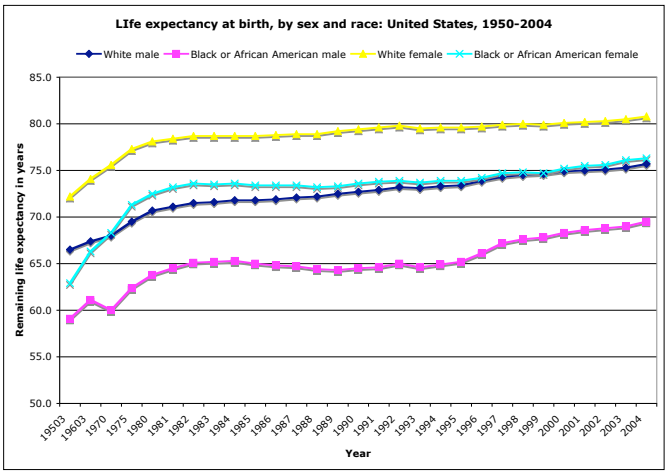
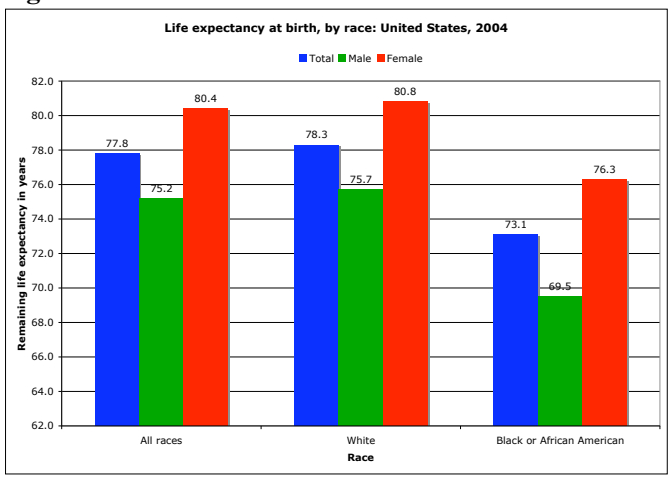


Figure 102:



Source: Health, United States 2006 table 27

Furthermore, while differentials persist into old age, the gap is narrower for the extra years expected after 65. White women can expect an extra 20 years while black men only 15.2.

Figure 103:

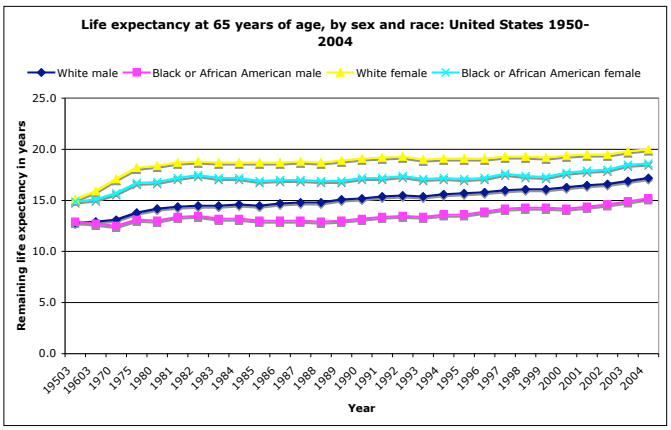
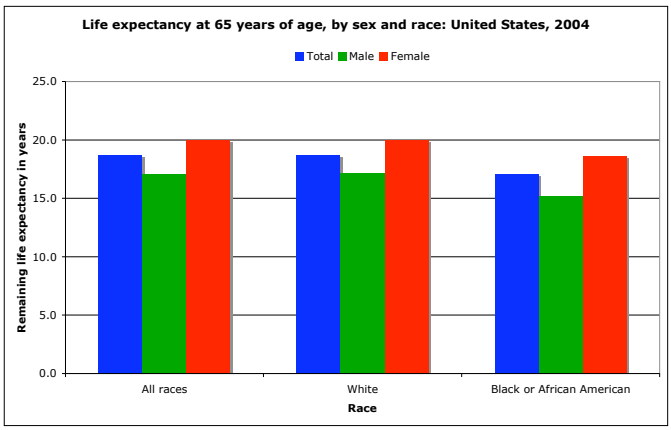


Figure 104:



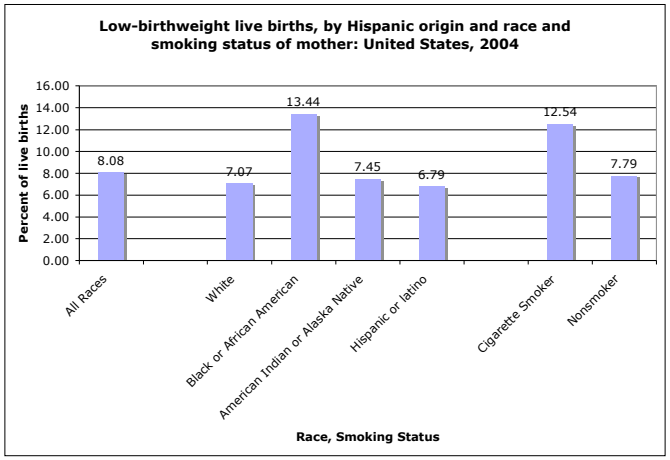
Source: Health, United States 2006 table 27

Infant Mortality

Since 1983 the infant mortality rate in the US has been steadily decreasing: there were 10.9 deaths per 1,000 live births in 1983 compared to 6.8 in 2003. Furthermore, while low birthweight has always been associated with higher infant mortality rates, advancements in medical technology are improving survival. In 1983 the infant mortality rate for a newborn weighing less than 2,500 grams was 95.9 (per 1,000 live births) whereas in 2003 the rate had dropped to 59.4[49]. Nevertheless, this is still far higher than the rate of 2.3 deaths per 1,000 live births for newborns weighing more than 2,500 grams.

Unfortunately there are striking differentials in low birthweight among racial/ethnic groups, with African American demonstrating the highest prevalence. As of 2004, low birthweight was lowest among Hispanics (6.79% of live births), followed by white, non-Hispanics (7.79%), while 13.74% of non-Hispanic African Americans babies were born with a birthweight below 2,500 grams. This is higher than the rate of low birthweight infants among smokers (12.54%) which is a well established risk factor for low-birthweight.

Figure 105:



Source: Health, United States 2006 table 13

[49] Health, United States 2006. Table 21

The higher infant mortality rates follow. As of 2003, infant mortality among African Americans was 13.6 (per 1,000 live births) compared to 5.7 among white non-Hispanics (figure 106). These rates appear to decrease with increasing education across all racial/ethnic groups (figure 107).

Figure 106:

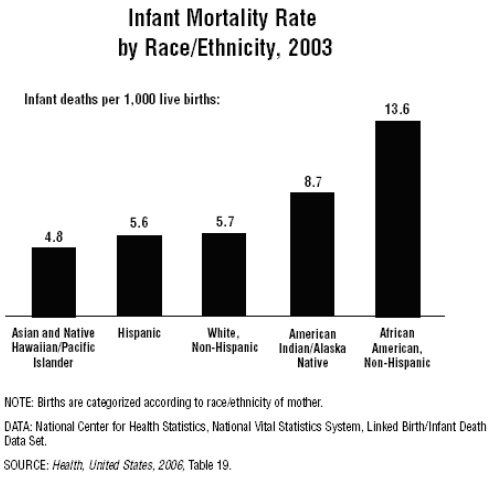
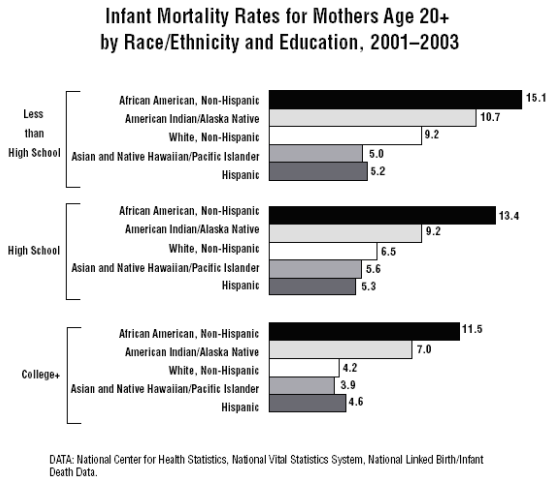


Figure 107:

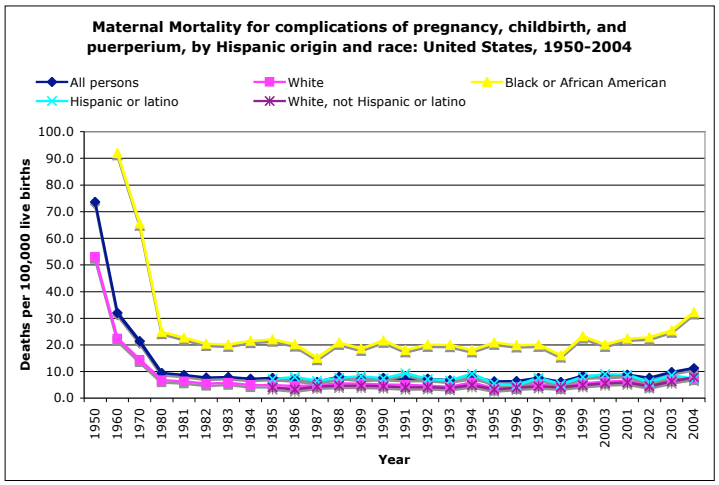


Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 8 and 9

Maternal Mortality

Similar to infant mortality rates, there is also a disturbing and persistent trend of higher levels of maternal mortality among African American women. As of 2004, the maternal mortality rate among African American women was 32.3 (per 100,000 live births) compared to 7.5 for white women. The pattern persists across mothers' age.

Figure 108:



Source: Health, United States 2006 table 43

Figure 109:

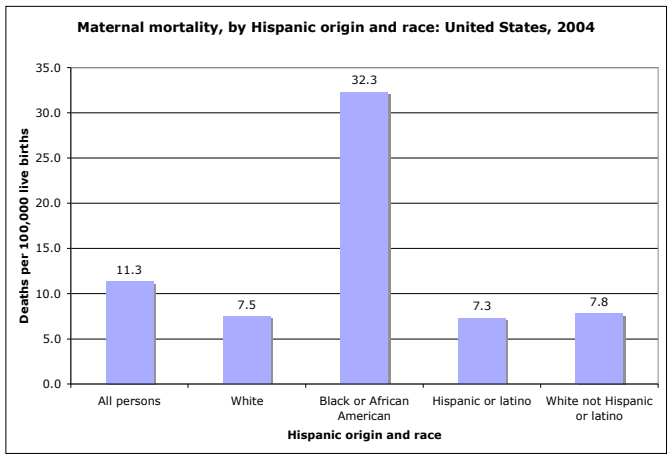
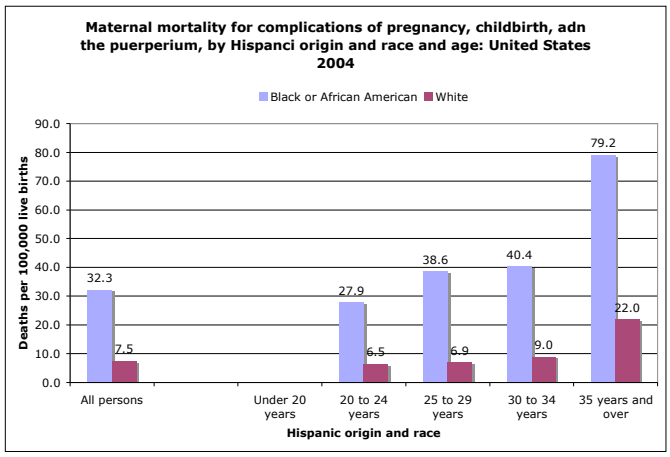


Figure 110:



Source: Health, United States 2006 table 43

Death Rates

Similar to infant mortality rates, overall death rates (due to all causes) have been decreasing albeit with persistent gender and racial differentials. African Americans have the highest rates of mortality and Asians/Pacific Islanders the lowest.

Figure 111:

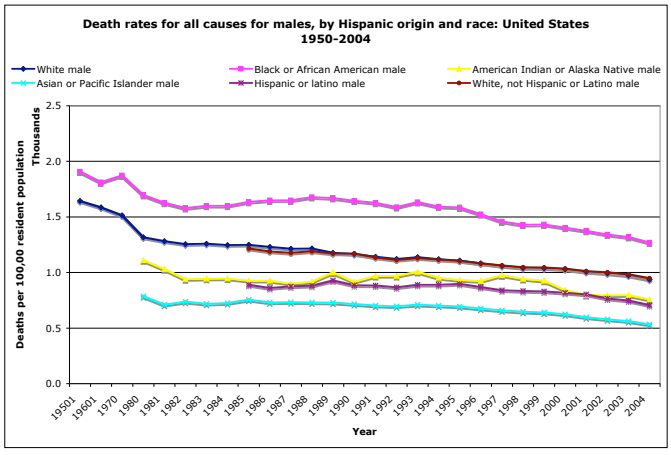
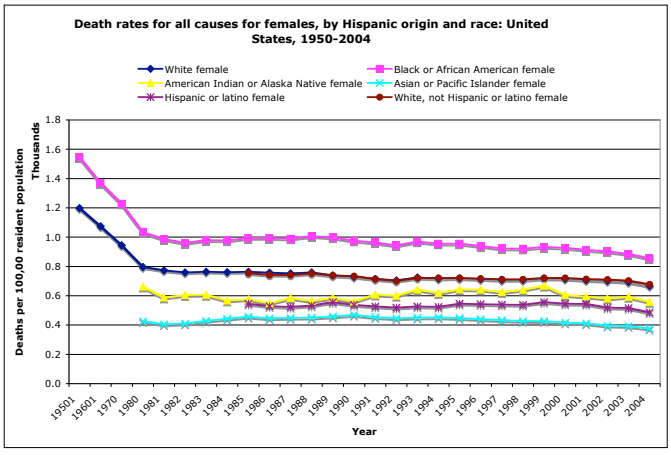


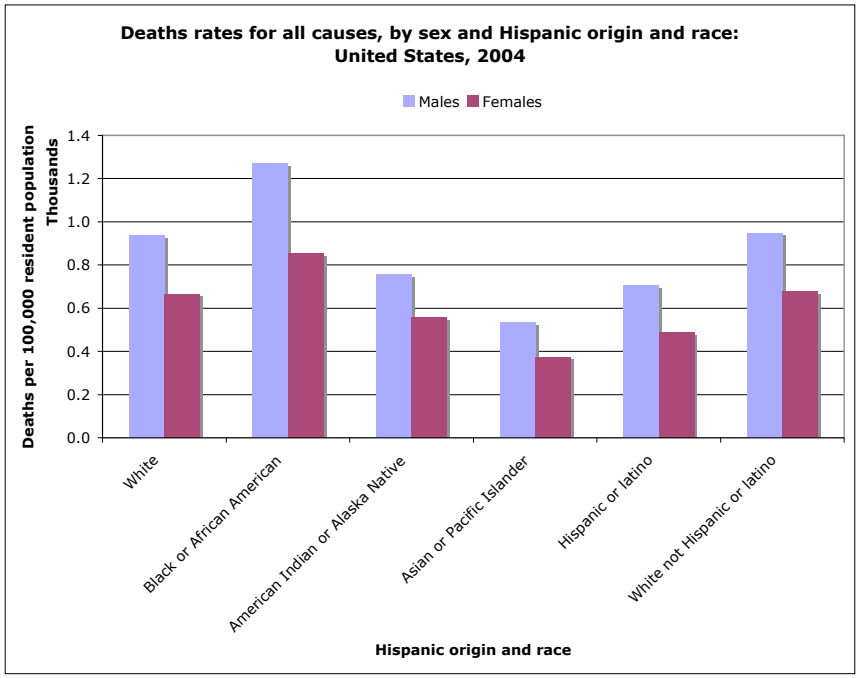
Figure 112:



Source: Health, United States 2006 table 35

As of 2004, the death rate ranged from 400 per 100,000 for Asian/Pacific Islander females to 1,300 per 100,000 for African American males. This is more than a threefold difference.

Figure 113:



Source: Health, United States 2006 table 35

Overall, the leading cause of death, while similar across different racial/ethnic groups, demonstrates differences in the relative prevalence and burden.

Figure 114:

Leading Causes of Death by Race/Ethnicity, 2003

	Rank	White, Non-Hispanic	Hispanic	African American, Non-Hispanic	Asian and Pacific Islander	American Indian/ Alaska Native
All Ages	1	Heart Disease	Heart Disease	Heart Disease	Cancer	Heart Disease
	2	Cancer	Cancer	Cancer	Heart Disease	Cancer
	3	CVD	Accidents	CVD	CVD	Accidents
	4	Chronic Lung Disease	CVD	Diabetes	Accidents	Diabetes
	5	Accidents	Diabetes	Accidents	Diabetes	Liver Disease

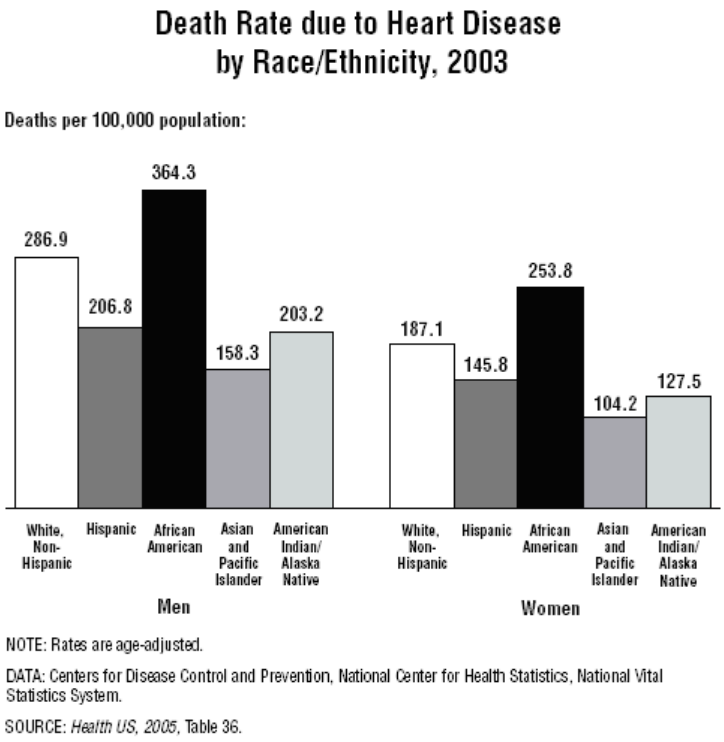
	Rank	White, Non-Hispanic	Hispanic	African American, Non-Hispanic	Asian and Pacific Islander	American Indian/ Alaska Native
Ages 25–44	1	Accidents	Accidents	Heart Disease	Cancer	Accidents
	2	Cancer	Cancer	Accidents	Accidents	Heart Disease
	3	Heart Disease	Homicide	Homicide	Heart Disease	Suicide
	4	Suicide	Heart Disease	HIV	Suicide	Liver Disease
	5	Liver Disease	HIV	Cancer	CVD	Cancer

NOTE: CVD = Cerebrovascular disease.
DATA: National Center for Health Statistics, National Vital Statistics System
SOURCE: http://www.cdc.gov/nchs/data/dvs/lcwk3_2003.pdf and http://www.cdc.gov/nchs/data/dvs/lcwk6_2003.pdf.

Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 13

For example, in 2003 the death rate due to heart disease was 364.3 per 100,000 for African American men and 104.2 per 100,000 for Asian/Pacific Islander women. Indeed, relative to other racial/ethnic groups, African Americans demonstrated the highest mortality rate for heart disease across genders.

Figure 115:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007*, figure 11

With respect to cancer, once again males have higher death rates attributed to malignant neoplasms than females and African Americans more than any other ethnic/racial group. Although the rates are decreasing across racial and ethnic lines, the disparities remain.

Figure 116:

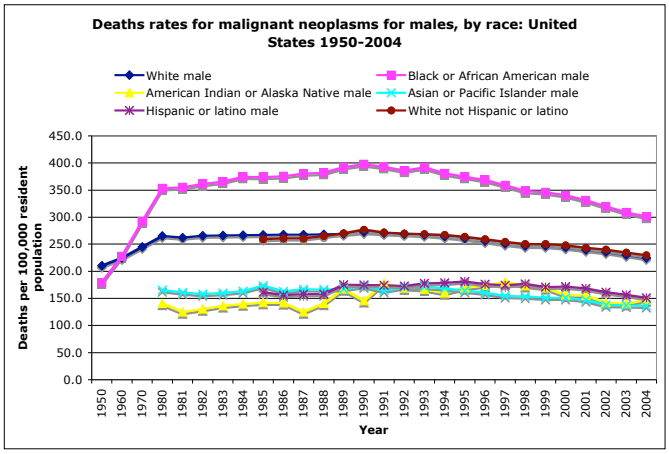
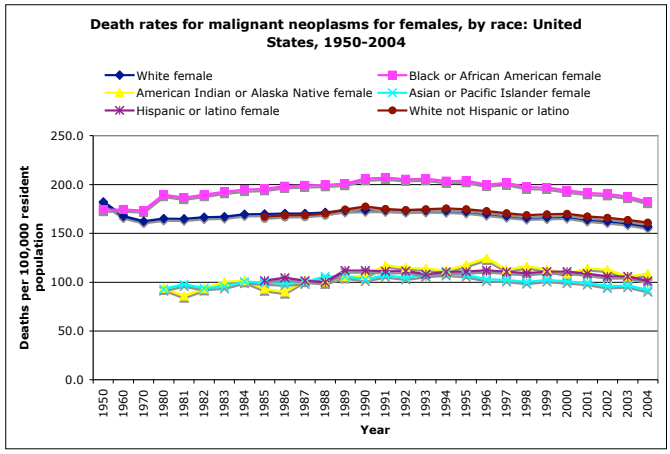


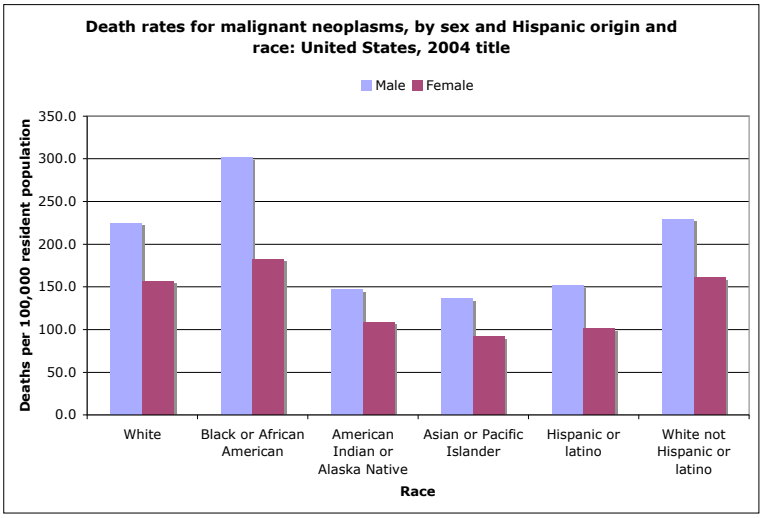
Figure 117:



Source: Health, United States 2006 table 38

In 2004, African American Males had a rate of 301.2 deaths per 100,000 compared to 224.4 for white males and 92 per 100,000 for Asian/Pacific Islander females. The higher rates may be explained in part to the higher prevalence of smoking among African American men.

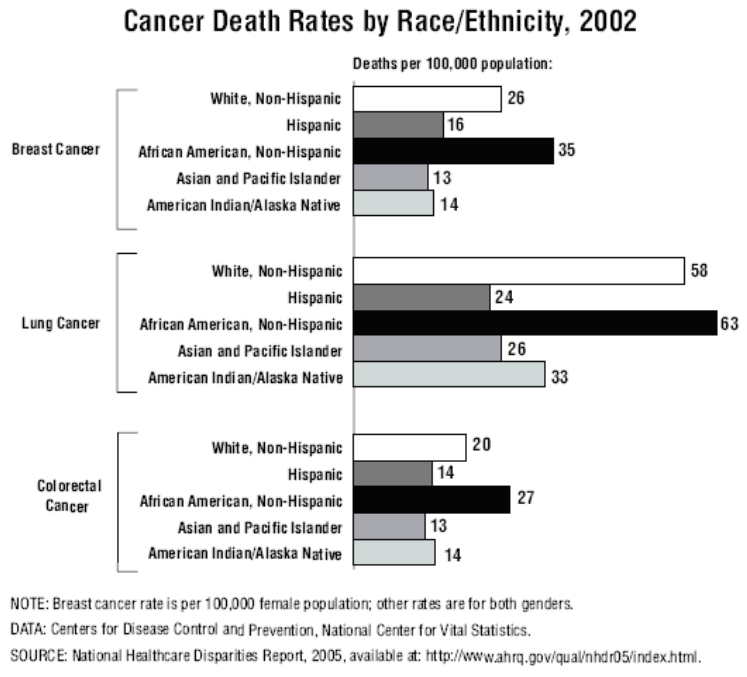
Figure 118:



Source: Health, United States 2006 table 38

If we look more specifically at the types of cancers, we find that African Americans have higher rates mortality from lung cancer, breast cancer as well as colorectal cancer.

Figure 119:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007,* figure 12

With respect to respiratory cancers, while the rate has been decreasing for men, it has been steadily increasing for women. Among men, there are clear racial disparities which are less evident among women.

Figure 120:

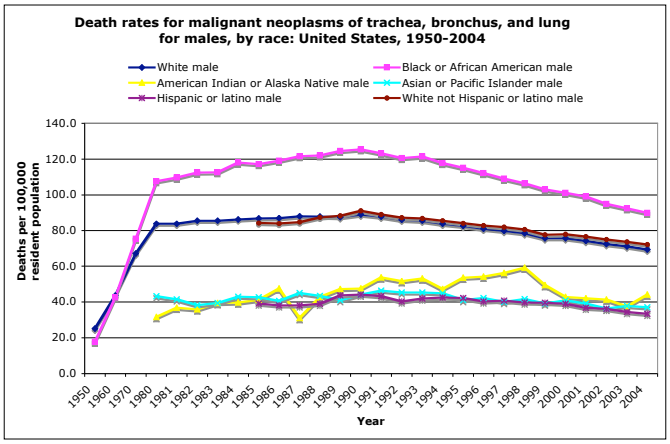
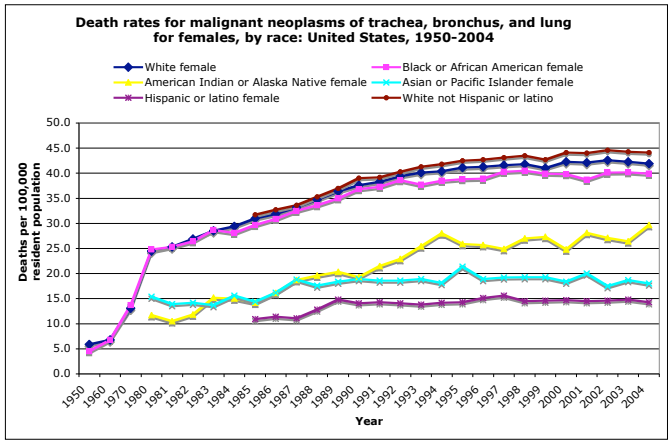


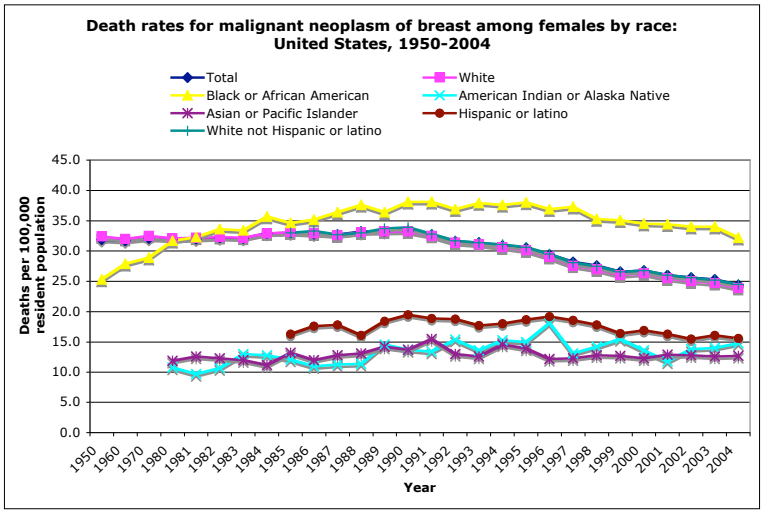
Figure 121:



Source: Health, United States 2006 table 39

The trend in the rates of breast cancer deaths is also alarming. While the rate appears to be decreasing since the 1990s for white women the rates have increased for black women culminating in a divergence of the races. As of 2004, black women had a death rate of 32.2 per 100,000 compared to 23.9 for white women and 12.7 for Asian/Pacific Islanders.

Figure 122:



Source: Health, United States 2006 table 40

Death rates for chronic respiratory diseases have been converging by gender but diverging by race for females with white women showing a more rapid rate of increase than other racial/ethnic groups. As of 2004, white women had a rate of 38.4 per 100,000 compared to 9.3 for Asian/Pacific Islander women and 51.1 for white men.

Figure 123:

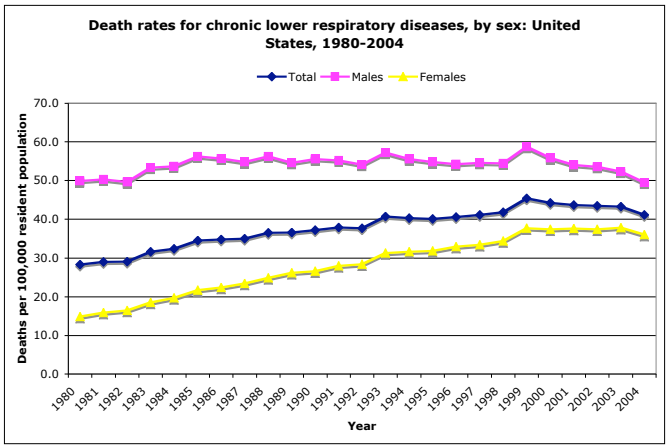
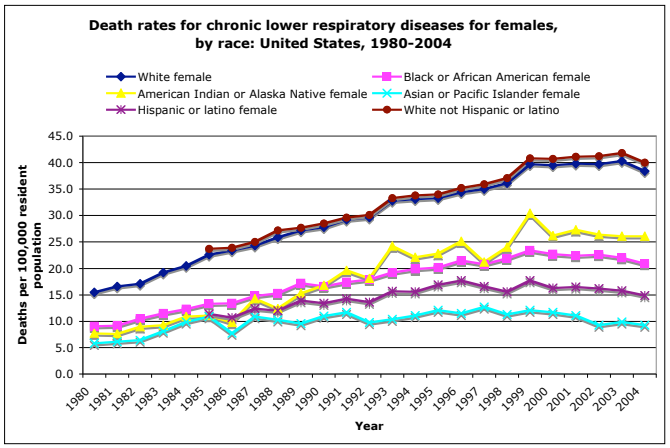
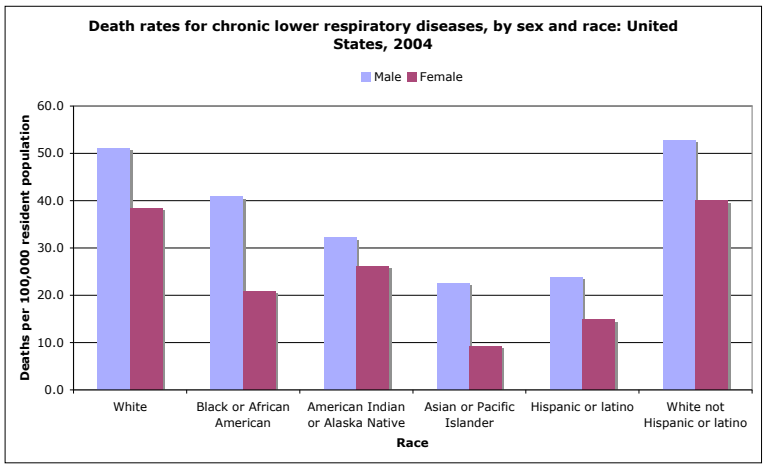


Figure 124:



Source: Health, United States 2006 table 41

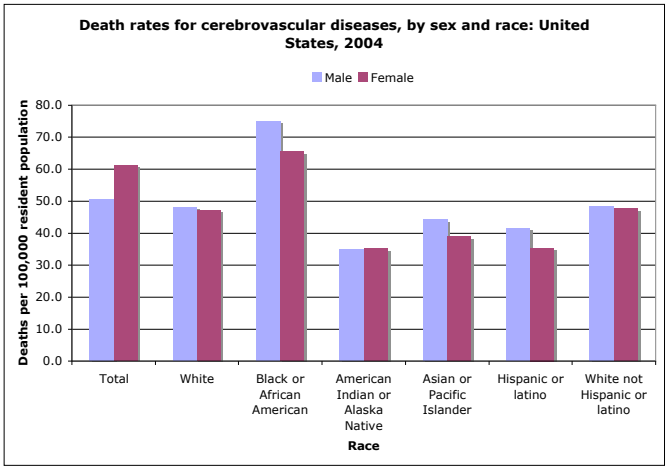
Figure 125:



Source: Health, United States 2006 table 41

Death rates due to cerebrovascular disease have less of a gender pattern but African Americans again show higher rates than other ethnic groups.

Figure 126:

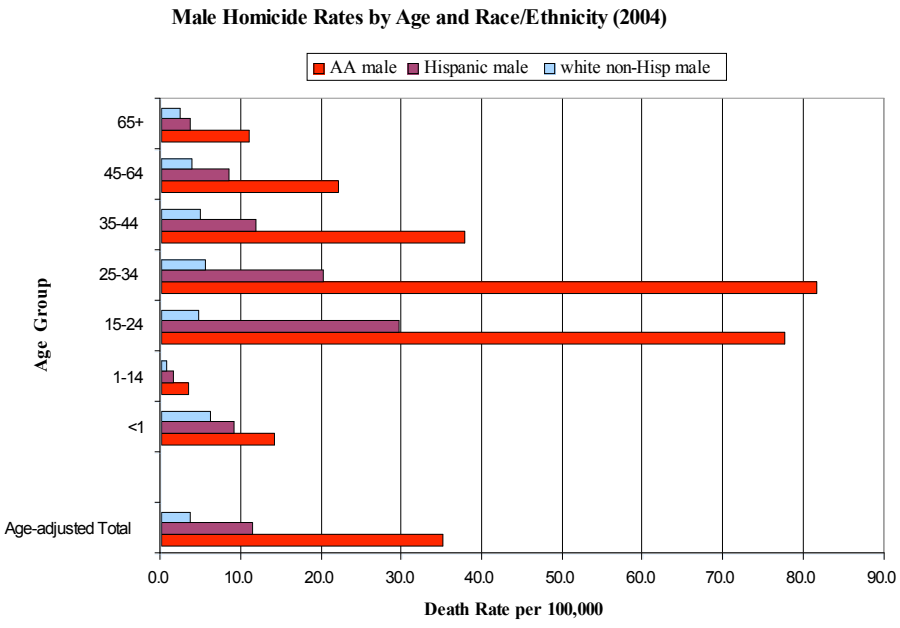


Source: Health, United States 2006 table 37

Homicides

Perhaps one of the more disturbing racial disparities is in the rate of homicides. While in the previous section we saw that the rate of homicide was higher in the US than any other OECD country and higher among men than women, more careful examination reveals even more reason for concern. African American men between the ages of 25 and 34 years have a homicide rate of 81.6 per 100,000. This compares to a rate of 5.5 for white males in the same age group.

Figure 127:



Source: Health, United States 2006 table 45

HIV/AIDS

Yet again we see African Americans in the lead with respect to the total numbers of Americans living with HIV/AIDS as well as with the cumulative number of deaths due to the disease. Of Americans living with HIV/AIDS in 2005, 44% (188,077 people) were African American, 36% (150,673 people) were white, and 19% (78,901 people) were Hispanic.

Figure 128:

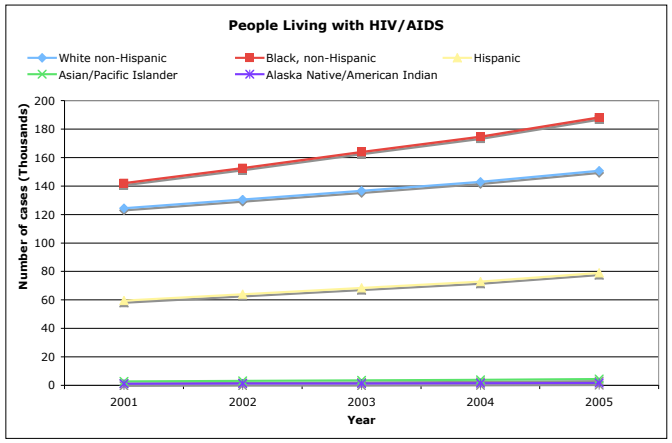
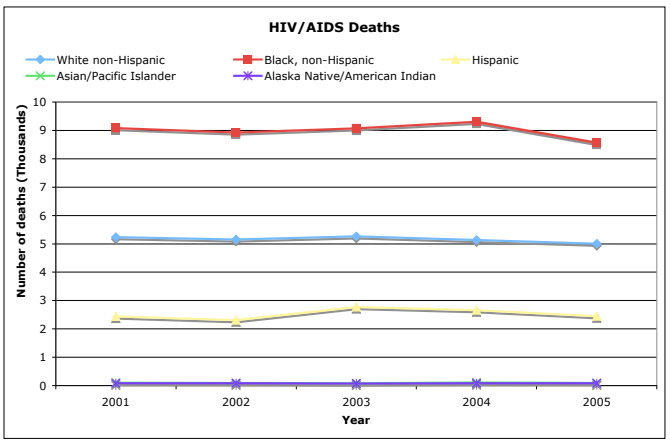


Figure 129:

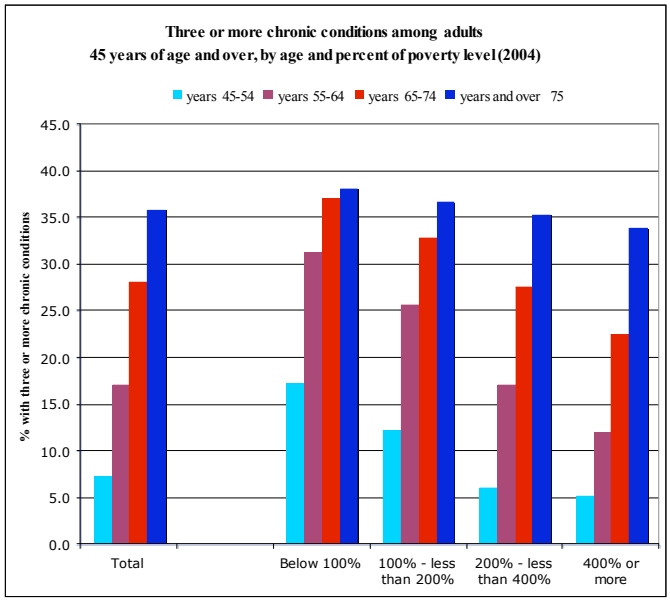


Source: Data from 2005 HIV/AIDS Surveillance Report.

Morbidity

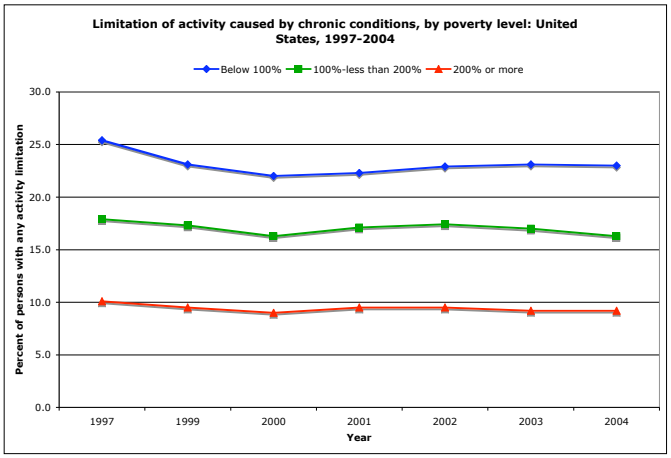
In addition to differentials in death, Americans also express differences in levels of morbidity. While it is not surprising that the percentage of those expressing three or more chronic conditions increases with increasing age, the poor have consistently higher rates across age groups (figure 130). Furthermore, there is a clear pattern among those who express limitation of daily activities by poverty level. Once again, the poor express more limitations than the near-poor and the near-poor more than the non-poor (figure 131).

Figure 130:



Source: Health, United States 2006 figure 15

Figure 131:



Source: Health, United States 2006 table 58

The prevalence and type of diseases also demonstrate variance across age, gender, income, and race/ethnicity. For example, according to the 2005 National Health Interview Survey (NHIS), 13% of Native Americans/Alaskan Natives, 12.6% of whites, 10.3% of blacks and 8.3% of Hispanics have ever been told by a healthcare provider that they have any type of circulatory diseases. In particular, more blacks (31.5%) report having been told they have hypertension than any of the other racial groups. Furthermore, there is a clear pattern demonstrating that the poor are more likely to have been told they have any type of circulatory diseases than the near-poor and the non-poor are least likely (figure 132-133).

Figure 132:

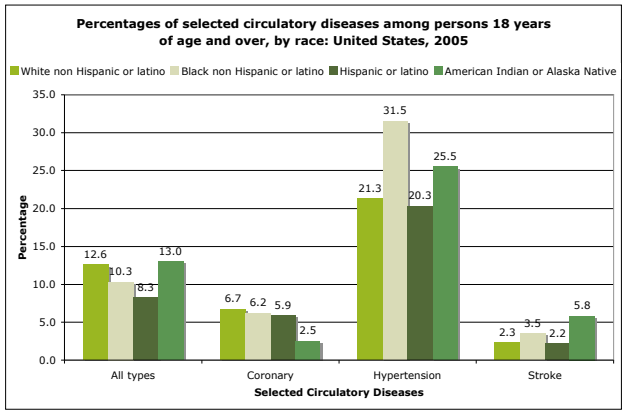
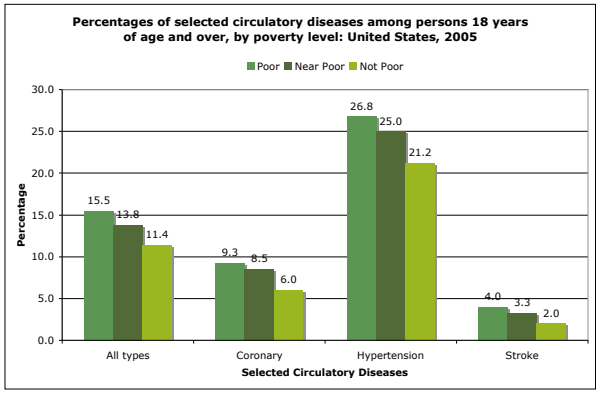


Figure 133:



Source: National Health Interview Survey 2005 table 2

In addition, more whites (8.4%) have ever been told they have any kind of cancer than blacks (3.9%) or Hispanics (3.9%). However, more African Americans have been told they have

prostate cancer (2.8%) than whites (1.7%) or Hispanics (0.9%). What is striking is the high percentage of Native Americans/Alaskan Natives who reported every being told they have any type of cancer in general (9.2%) or prostate cancer in particular (6.8%). Interestingly, there is a reverse relationship between overall cancer and poverty; fewer poor (6.1%) have ever been told they have any type of cancer than the near-poor (7.5%) and non-poor (8.2%).

Figure 134:

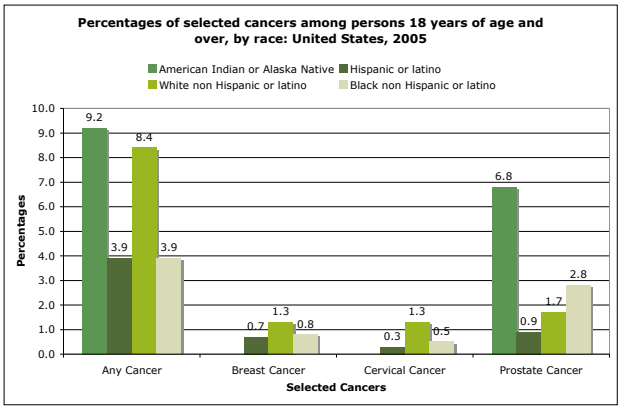
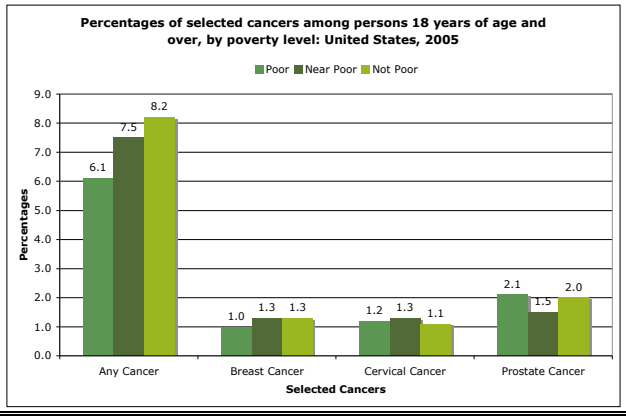


Figure 135:



Source: National Health Interview Survey 2005 table 6

For respiratory diseases, African Americans were more likely to have ever been told they have asthma (11.6%) but least likely to have been told they have hay fever (6.1%). Sinusitis appeared to be most common amongst all racial groups; 14.7% of whites, 13.5% of blacks, 11.9% of Native Americans/Alaskan Natives, and 8.6% of Hispanics were ever told they have sinusitis. Poor Americans were more likely to have been told they have emphysema (3.6%), asthma at any point (14.9%), asthma currently (11.1%), and chronic bronchitis (7.7%) than the near-poor and non-poor. However, the non-poor were more likely than the poor to have been told they have hay fever (9.6% vs. 7.7%).

Figure 136:

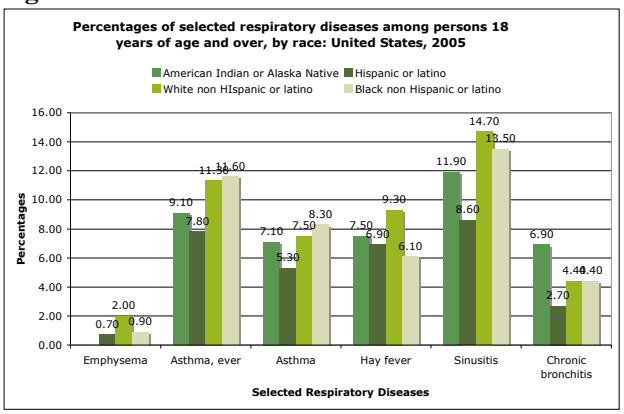
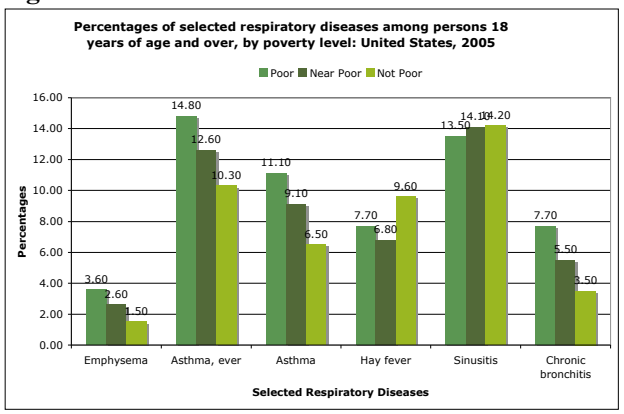


Figure 137:



Source: National Health Interview Survey 2005 table 4

Poverty continues to be a consistent predictor of having ever been told to have diabetes, ulcers, kidney disease, and arthritis. The poor are most likely to have reported chronic joint symptoms (32%) and least likely to have been told they have liver disease (2.9%). It is interesting to note that consistently more Native Americans/Alaskan Natives report having ever

been told to have been told to have arthritis, liver disease, kidney disease, ulcers, and diabetes than the other racial/ethnic groups.

Figure 138:

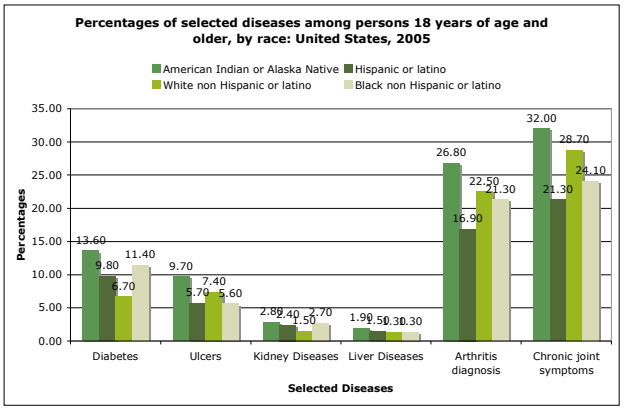
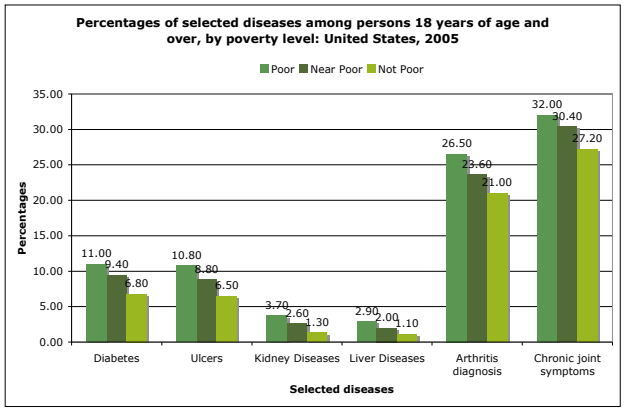


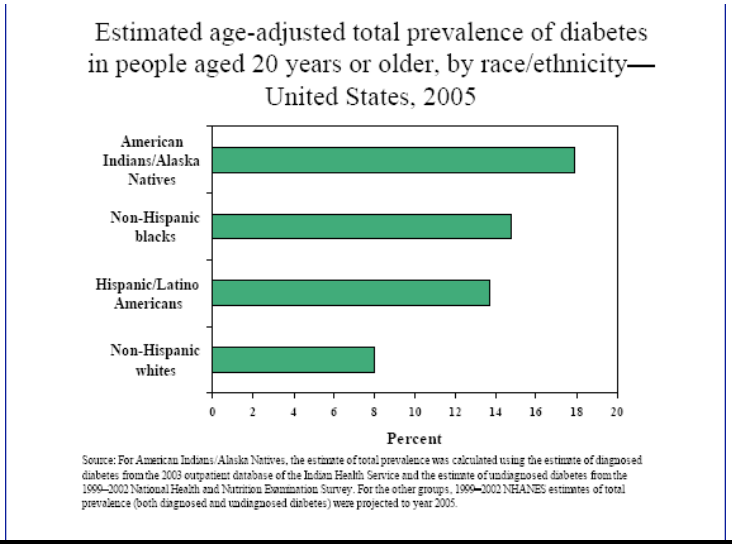
Figure 139:



Source: National Health Interview Survey 2005 table 8

According to the American Diabetes Association, there are currently an estimated 20.8 million Americans, 7% of the population, with diabetes (6.2 million of whom are undiagnosed). Diabetes is more prevalent among men (10.9 million) than women (9.7 million) and increases with age. American Indians/Alaskan Natives have the highest prevalence (15.1%), followed by blacks (13.3%), Hispanics (9.5%), and whites (8.7%). There is considerable variation among the Native Americans/Alaska Natives with those in Southern Arizona presenting rates as high as 27.6%. Complications of diabetes include heart disease and stroke, high blood pressure, blindness, kidney disease, amputations, and complications in pregnancy. In general, diabetics have a risk of death that is twice as high as their non-diabetic counterparts[50].

Figure 140:



source: CDC, National Diabetes Fact Sheet, United States 2005

[50] CDC, National Diabetes Fact sheet, United States 2005.

Dental Health

Similar to the other diseases discussed, dental health also shows differentials across racial/ethnic and poverty levels. For example, nearly one-third of poor American children and adolescents aged between 6 and 17 years (32.1%) have untreated dental caries. This compares to 12.7% among the non-poor. There are also differentials across racial/ethnic groups with Mexicans presenting with the highest prevalence of untreated caries (32%) and whites the least (17.5%). These racial differences persist even within poverty levels.

Figure 141:

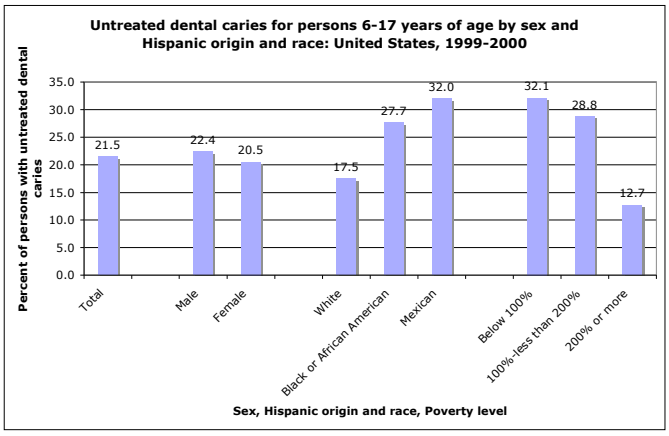
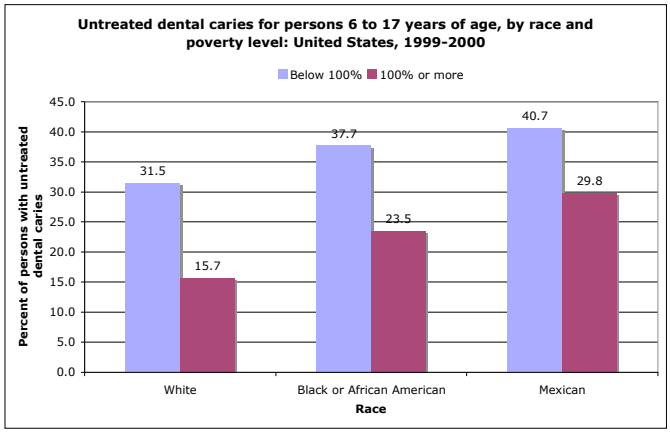


Figure 142:

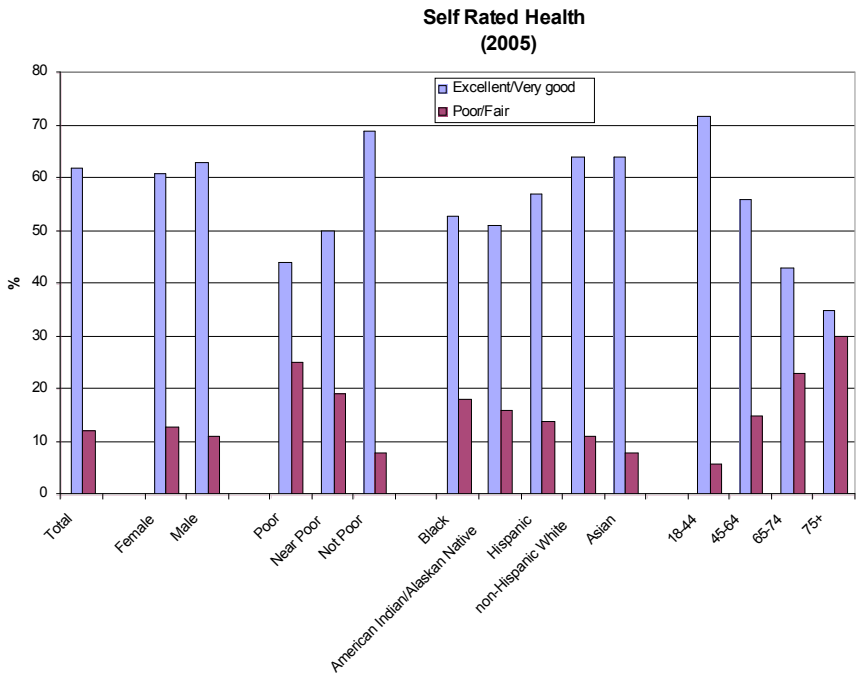


Source: Health, United States 2006 table 75

Subjective Health

In general, the majority of Americans (62%) rate their health as excellent and only a small minority report fair or poor health (12%). However, these proportions decrease with increasing age. Among Americans 75 years and older, nearly one-third rated their health as fair or poor and another third as excellent or very good. There is also a clear pattern discerned with poverty level. Americans at or below 100% of the FPL are more likely to rate their health as fair/poor and less likely to rate their health as excellent/very good than the non-poor. Indeed nearly one in every four poor Americans considered their health to be fair or poor. There is also a pattern amongst race/ethnicity albeit more subtle. In general, it would appear that African Americans are more likely to rate their health as poor and Asians least likely.

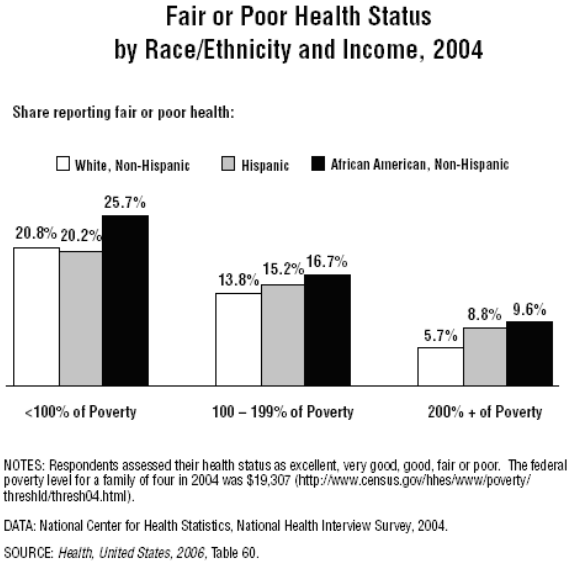
Figure 143:



Source: National Health Interview Survey, 2005

Indeed, it would appear that within poverty levels, much of the racial differentials disappear. However, African American poor are still more likely than their white or Hispanic counterparts to report poor health. Furthermore, among the non-poor, the whites are least likely to report poor health; 5.7% verses 8.8% for Hispanic non-poor and 9.6% for African American non-poor.

Figure 144:



Source: KFF, *Key Facts: Race, Ethnicity and Medical Care, 2007*, figure 7

In addition to subjective overall health ratings, more specific feelings of hopelessness and nervousness provide more detailed information on subjective well-being. According to the 2005 National Health Interview Survey, the poor consistently reported feeling of hopelessness and nervousness more than their near-poor or non-poor counterparts. Among the racial groups, Native Americans/Alaskan Natives were more likely to express feelings of hopelessness and nervousness.

Figure 145:

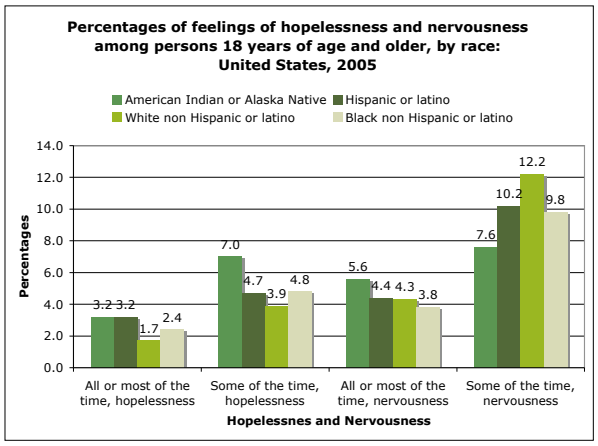
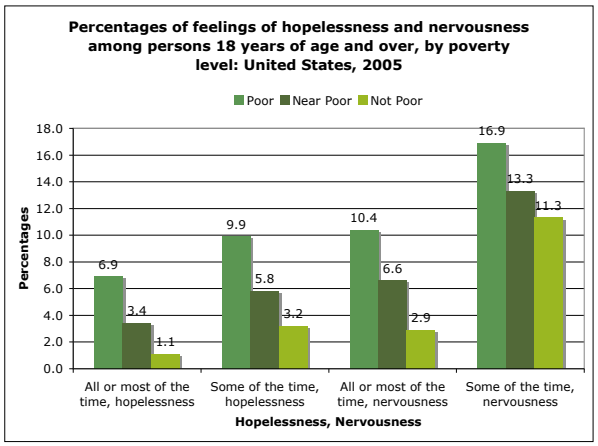


Figure 146:



Source: National Health Interview Survey 2005 table 14

Summary of Health Inequalities

Health inequalities in America span access to healthcare services, the quality of the care that is accessed as well as health outcomes. Although lack of healthcare coverage and poverty are important determinants, it is remarkable how resilient some of the racial disparities are over time and how they pervade across diseases. What is perhaps most disconcerting is the consistently higher levels of mortality among African Americans of all ages independent of poverty levels.

Causes and Consequences of Health Inequalities

Thus far, the review of health and healthcare inequalities in the US has demonstrated that while inequalities in healthcare access appear to be increasing as is the quality of the care that is accessed, on aggregate, health behaviors are converging while disparities in health outcomes appear to be persisting across racial/ethnic, income and gender groups. For the pervasive inequalities, evidence suggests that poverty is most consistently related to poor health outcomes but race/ethnicity also plays an important and independent role. While age and gender differences, where present, may be explained physiologically, and State differences through differential healthcare policies and practices, how do we explain the economic and racial differentials in a manner that would facilitate effective interventions? There has been extensive research exploring the mechanisms of inequalities in health as well as the impact inequalities in other dimensions of life have on health. The following section reviews the leading theories and existing empirical evidence for both the causes and consequences of health inequalities.

Causes of Health Inequalities

Public health research has long since drawn a link between *socio-economic status* (SES) and health. Traditionally SES has been measured by proxies such as income, education, and at times

occupation. However, with increasing efforts to elucidate an explanatory mechanism for the relationship, discussions have emerged regarding what SES is really capturing and whether it is an end state- as implied by 'status'- or rather a more fluid continuum within which people are constantly moving. While the use of SES remains pervasive in public health research, the following theories help reveal the means by which socio-economic variables affect health.

The 'social determinants of health' approach attempts to explain the link by suggesting that it is the circumstances in which people live and work which account for differentials in health outcomes; wherein adverse and disempowering conditions are associated with low status[51]. Marmot and colleagues suggest that it is not merely income or material assets but the relative affluence and control that distinguish the health of people in different socioeconomic positions: "What is important is not so much what you have but what you can do with what you have"[52]. Wilkinson argues the 'hierarchy-health hypothesis' based on the 'psychosocial impact of low social status' and the disruptive influence that has on social cohesion and subsequently health via neuroendocrine pathways[53]. Hertzman proposes 'biological embedding' as the means by which to explain differential host resistance to diseases. He argues that the early childhood environment via neurochemical mechanisms affects cognitive, behavioral and social development which in turn influences how we interpret, cope with, and physiologically respond to stressors[54]. He proposes that the biological interpretation of experiences may have a long-term impact on physiological processes that can explain the socioeconomic patterns of morbidity and mortality. Francis and colleagues stress the importance of family quality and parenting in influencing lifetime vulnerability to physical and mental diseases[55]. Singer and Ryff offer the theory of 'allostatic load' which they describe as the accumulation of wear and tear resulting from a lifetime of psychosocial stress and genetic predisposition. Higher allostatic load compromises physical and cognitive functioning which then translates to higher levels of mortality and a greater incidence of morbidity[56]. Similarly, Garofalo and Yali have proposed 'chronic stress'- defined as an abnormally persistent stress that may either be episodic or continuous- to be the factor which differentiates socio-economic groups with respect to their health outcomes. They suggest that such stresses increase the vulnerability to and severity of infectious diseases, prolong the healing process, reactivate latent viruses and exacerbate chronic diseases processes[57]. Taylor and Seeman suggest that 'pyschosocial resources'- which include optimism, coping, control, and social supports- can evoke resilience to stress and are differentially distributed among the different social classes[58]. While all these relate to internalization of external stimuli, the environment has also been implicated for its contribution to socioeconomic differentials in health.

Cohen claims that lower socio-economic groups are at increased risk of infectious diseases based on an increased exposure to infectious agents coupled with an increased vulnerability[59]. Adler and Ostrove further support the importance of environment, not only in the physical

[51] Banks, James, Michael Marmot, Zoe Oldfield, and James Smith. Disease and Disadvantage in the United States and in England. *JAMA* 2006;295(17):2037-2045

[52] Marmot, Michael. Health in an unequal world: social circumstances, biology and disease. *Clinical Medicine* 2006;6:559-572

[53] Wilkinson, Richard. Health, Hierarchy, and Social Anxiety. *Annals New York Academy of Science* 1999;896:48-63

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[55] Francis, Darlene, Frances Champagne, Dong Liu, and Michael Meaney. Maternal Care, Gene Expression, and the Development of Individual Differences in Stress Reactivity. *Annals New York Academy of Sciences* 1999;896:66-84

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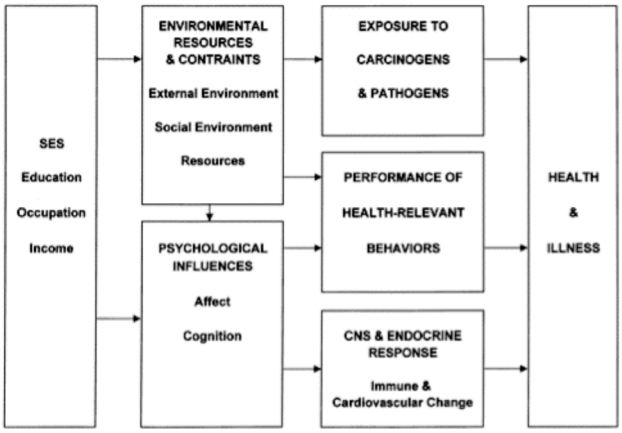
[59] Cohen, Sheldon. Social Status and Susceptibility to Respiratory Infections. *Annals New York Academy of Sciences* 1999;896:246-253

exposure to different pathogens and carcinogens but also the social threats and risks. In addition, the different degrees of social support and control afforded in different environments conditions individual responses and behaviors which directly or indirectly impact on health processes[60]. Family support has also been suggested to play an important role in mediating such environmental adversities[61].

Socio-Economic Status and Health Pathways[62]



On a more macro scale, there is a growing body of literature alongside empirical evidence that suggests that more unequal societies suffer a greater diseases burden. Kawachi and colleagues propose that this is due in part to eroding sociability, trust, and reciprocity. This is supported by the inverse relationship observed between social capital and inequality[63]. Wilkinson's hierarchy-health hypothesis and the psychosocial disruption of social cohesion also serves to explain the relationship between societal inequalities and population health. Kaplan and Manuck suggest that it is through an exacerbation of behavioral differences that class inequities influence health outcomes[64]. They argue that interactions within groups and the subsequent reinforcement of group behaviors is more explanatory than the relationship between groups in explaining differentials in health outcomes.

Another layer of inequality in health has been attributed to racial/ethnic categories. However, there is considerable debate as to whether there is something inherent in race or ethnicity, as currently defined, that would explain the differentials in health outcomes or whether the categorization of race itself perpetuates racial discrimination[65]. On the one hand, there are efforts to legitimize the perceived differences by demonstrating genetic variances between different ethnic and racial groups with respect to their vulnerability to diseases. On the other hand, it has been suggested that current differentials can better be explained by psycho-social manifestations of historical experiences of imbalanced power relations and racism. Indeed, it has been suggested

[60] Adler, Nancy and Joan Ostrove. Socioeconomic Status and Health: What We Know and What We Don't. Annals New York Academy of Sciences 1999;896:3-15
[61] Francis, Darlene, Frances Champagne, Dong Liu, and Michael Meaney. Maternal Care, Gene Expression, and the Development of Individual Differences in Stress Reactivity. *Annals New York Academy of Sciences* 1999;896:66-84
[62] Adler, Nancy *et al*.
[63] Kawachi, Ichiro. Social Capital and Community Effects on Population and Individual Health. *Annals New York Academy of Science* 1999;896:120-130
[64] Kaplan, Jay and Stephen Manuck. Status, Stress, and Atherosclerosis: The Role of Environment and Individual Behavior. *Annals New York Academy of Sciences* 1999;896:145-161
[65] Frank, Reanne. The Misuse of Biology in Demographic Research on Racial/Ethnic Differences: A Reply to Van den Oord and Rowe. *Demography* 2001;38(4):563-567.

that the expression of genetic differences, if present, is likely to have been influenced by past and present psycho-social and environmental factors which cannot be discounted even in light of biological explanations. However, disentangling histories of racial discrimination from economic deprivation and the implications they have for exposure and susceptibility has been an as yet insurmountable challenge[66]. The empirical evidence does illustrate that at times, racial differences persist even after controlling for current socioeconomic factors. The additive effect of race above and beyond socioeconomic conditions is thought to be related to discrimination at an individual and institutional level as well as a 'societal stigma of inferiority' which exacerbates poor health outcomes[67].

There have been numerous attempts to substantiate the proposed mechanisms underlying health inequalities through empirical analysis. However, the evidence is sketchy at best, largely due to the difficulties in measuring the long-term psychosocial factors attributed to socioeconomic and racial differentials. Nevertheless, the evidence suggesting that there is more to the relationship than conventional risk factors could capture is clear. Perhaps most remarkable are the Whitehall studies by Marmot and colleagues which demonstrate that social class differences in the morbidity and mortality of heart diseases remain unaccounted for even after controlling for risk factors such as age, smoking, blood pressure, cholesterol, and glucose[68]. The inclusion of psychosocial factors related to the work environment and non-work social circumstances in the Whitehall II study still left a substantial portion of the variation between social status and health unexplained[69].

Studies looking at more specific relationships between particular diseases outcomes and aspects of work or social life have shed light on the mechanism of the relationship. For example, a further analysis of the Whitehall II cohort demonstrated that cumulative work stress was a significant predictor of general and central obesity after controlling for factors such as smoking, fiber intake, alcohol consumption, and physical activity[70]. Not only does the stress associated with work appear to be harmful but so too does the stress associated with not working. Unemployment has been associated with increased susceptibility and decreased host resistance while increased social status corresponds to diminished risk[71]. Additionally, Ferrie and colleagues found an association between self reported economic difficulties and coronary events after controlling for the known risk factors[72]; and the study by Sing-Manoux and colleagues demonstrated self reported SES to be a better predictor of health outcomes among middle-aged men than objective measures of social status[73]. This supports the notion of psychosocial processing in the mechanism relating SES to health.

With respect to environmental influences, an investigation of homicides, adolescent births and income inequality, demonstrated a correlation between the decline in US homicide and adolescent birth rates with declines in unemployment and improvements in income among the poor suggesting the 'destructive psychosocial and behavioral effects of inequality'[74]. Moreover, a

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[70] Brunner, Eric, Tarani Chandola, and Michael Marmot. Prospective Effect of Job Strain on General and Central Obesity in the Whitehall II Study. *Am J Epidemiol* 2007;165:828-837

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[73] Singh-Manoux, Archana, Michael Marmot, and Nancy Adler. Does Subjective Social Status Predict Health and Change in Health Status Better Than Objective Status? *Psychosomatic Medicine* 2005;67:855-861

[74] Pickett, Kate, Jessica Mookherjee, and Richard Wilkinson. Adolescent Birth Rates, Total Homicides, and Income Inequality In Rich Countries. *Am J Public Health* 2005;95(7):1181-1183

*********study of 21 developed countries found a positive correlation between income inequality and obesity rates as well as income inequality and diabetes mortality rates after adjusting for gross national per capita income; suggesting the psychosocial impact of living in a hierarchical society[75]. Income inequality at the macro-level has also been linked to a higher prevalence of mental illness while within countries it is factors such as unemployment, low education and low levels of social capital which are associated with increased mental illness[76]. **An unexpected finding is that as countries get richer, they have a higher rate of mental illness.** In addition, an investigation of urban residential segregation and mortality rates found that the effect of income inequality on mortality persisted beyond residential segregation[77].

Studies investigating the impact of family relations on health outcomes have demonstrated that low scores on parental bonding scales significantly increase the risk of depression and anxiety as well as heart disease and diabetes[78]. Moreover, controlling for parental factors appears to diminish the affect of poverty on the emotional and cognitive development of children[79]. The importance of social networks was further demonstrated by Kubzansky and colleagues who found that depression to be more common among elderly people living in poor neighborhoods while a higher density of elderly in a neighborhood appeared somewhat protective of mental health independent of the availability or access to healthcare services[80].

As for racial differences, a study of disparities in outcome after acute myocardial infarction in California found that the worse outcomes observed among minority groups was explained by a higher prevalence of co-morbid conditions, a higher rate of risk factors as well as a 'disadvantaged social milieu' and not because of any biological differences[81]. This was further supported by a study that demonstrated that the disparity in mortality rates after a myocardial infarction was attributable to vascular risk factors, socioeconomic position, and treatment[82]. However, in an investigation of racial differentials in stroke among elderly Americans aged 65 to 74, socioeconomic disparities and a higher burden of risk factors among blacks contributed to, but did not entirely explain, the observed differences[83]. In addition, while some of the racial difference in hypertension can be explained by risk factors such as obesity, the CARDIA study found a relationship between reported racial discrimination and high blood pressure[84].

While it has been suggested that access to healthcare can mitigate the relationship between SES and coronary heart diseases, a study of a Swedish cohort (with universal healthcare coverage) demonstrated a significant difference in the risk of coronary heart disease between the

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[75] Picket, Kate, Shone Kelly, Eric Brunner, Tim Lobstein and Richard Wilkinson. Wider income gaps, wider waistbands? An ecological study of obesity and income inequality. *J Epidemiol Community Health* 2005;59:670-674

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[81] Iribarren, Carlos, Irina Tolstykh, Carol Somkin, Lynn Ackerson, Timothy Brown, Richard Scheffler, Leonard Syme and Ichiro Kawachi. Sex and Racial/Ethnic Disparities in Outcomes After Acute Myocardial Infarction. A Cohort Study Among Members of a Large Integrated Health Care Delivery System in Northern California. *Arch. Intern Med.* 2005;165:2105-2113

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[84] Picket, Kate, Oliver James, and Richard Wilkinson.

lowest and highest professional grades after adjusting for risk factors such as blood pressure, smoking, cholesterol, BMI, exercise, and alcohol[85]. Moreover, while education is often used as a proxy for socioeconomic status, an investigation of the role of cognitive ability in explaining the relationship between socioeconomic factors and health found that although cognitive ability is associated with health, it does not explain the social inequalities in health outcomes[86].

In sum, while it is increasingly clear that there are psychosocial mechanisms through which socioeconomic and racial factors affect health, there is as yet not sufficient empirical evidence to tease out the relationships.

IV. Possible Solutions

There is broad recognition among policy-makers and academics that the US healthcare system requires change. And there have been countless proposals by politicians, professional organizations, as well as researchers about the direction of that change. Indeed considerable government resources have been directed toward creating agencies that would help inform and direct a change (such as the Agency for Healthcare Research and Quality). In addition, existing agencies and institutions have been diligently collecting information and conducting analyses on disparities, both in terms of healthcare delivery as well as health outcomes. Nevertheless, while most of the proposed solutions focus on ways in which to fix the healthcare delivery system, not enough consideration has been given to understanding and ameliorating the mechanisms which perpetuate inequalities and deteriorate health. If we continue to separate health from the physical and social contexts through which it emerges and ignore the psychosocial processes by which it is mediated and mitigated, we will continue to be thwarted in our efforts to improve that health.

That being said, it is undeniable that universal healthcare coverage would benefit a great many Americans as would improvements in the quality of care provided. It is also increasingly evident that addressing the societal inequalities in general would resolve more than just the health problems faced by many Americans. However, the capitalist principles upon which the United States thrives is not likely to give way any time soon to a socialist system. And few Americans would advocate such a transition. Nevertheless, there is still a considerable amount of improvement which can be achieved to enhance the lives of Americans, improve their health and livelihoods, and enable them to take the most advantage of the capitalist system to which they contribute.

If we are, for the time being, going to set aside consideration for the psychosocial effects of discrimination in place of more 'tangible' solutions, then we too should join the call for universal, quality healthcare coverage. This is the very minimum we can do to address at least the healthcare needs if not the health of Americans.

International Comparisons

As we proceed, we must bear in mind the adage that 'one man's waste is another's treasure'. Many of the proposals put forth call for restructuring of some very powerful industries (i.e. the health insurance and pharmaceutical companies) whose profits and livelihoods, as well as the livelihoods of the many Americans who work for them, depend on the healthcare system as it is. The US healthcare system, like that of many other countries, is financed by a mixture of public and private resources. However, the delivery of the healthcare is entirely private. Other

[85] Picket, Kate, Oliver James, and Richard Wilkinson.

[86] Singh-Manoux, Archana, Jane Ferrie, John Lynch and Michael Marmot. The Role of Cognitive Ability (Intelligence) in Explaining the Association between Socioeconomic Position and Health: Evidence from the Whitehall II Prospective Cohort Study. *Am J Epidemiol* 2005;161:831-839

combinations of public and private delivery and financing are possible and exemplified by different countries (table…).

Table 7: Private and Public Sector Involvement in Health Care

		Delivery	
		Public	Private
Financing	Public	• Insurance and service delivery are handled by a single public agency • Norway, Sweden, Denmark, Finland	• The public pays for services through taxes or social security and the services are provided by private agencies (commercial or non-profit) • Canada, Japan, Germany, France, United Kingdom
	Private	• The cost is charged directly to users (through insurance or out-of-pocket payments) but services are provided in public facilities • No good example exists	• Health care is funded by private insurance or paid for directly by the patient and is provided in private facilities. • United States

Source: Blanchette, Claude and Erin Tolley, "Public and Private Sector Involvement in Health Care Systems: An International Comparison," *Bulletin 438E, Library of Parliament*, 1997.

The following table summarizes the different kinds of healthcare systems currently in practice, namely: the public financing- public delivery systems (such as those in Norway, Denmark, Finland, and Sweden); the public financing-private delivery systems (such as those of the UK, Canada, Germany, France, and Japan); and the private financing- private delivery systems (such as in the United States). The various State health insurance schemes (such as those in Oregon and Massachusetts) maintain the private financing-private delivery system but ensure, through State funds and tax incentives for employers, expanded insurance coverage. It has been suggested that much of the inefficiencies in the current healthcare system pertain to the multiple payer set-up. Such inefficiencies could be avoided with a single-payer finance system (whether private or public). The Proposal of the Physicians' Working Group of Single-Payer National Health System most resembles the public financing- with a delivery system that is a private-public partnership.[87]

Comparisons of Different Healthcare Systems

	Public financing – Public service delivery (Norway, Sweden, Denmark, Finland)	**Private financing – Private service delivery (United States)**	**Public financing – Private service delivery (United Kingdom, Canada, Germany, France, Japan)**
Coverage	Universal	Not universal	Majority are universal
Healthcare funding	Predominantly from general taxation but others have parallel contributions from social health insurance scheme and small percentage from private insurance Pros: • Healthcare funding sourced through general taxation ensures universal coverage • Coverage is not based on whether one is employed or on one's income or one's age or health condition • Theoretically, everyone can access healthcare services as funding Cons:	Private insurance purchased either through employer (for those employed) with employee contribution or purchased directly by the individual; For those 65 years old and above, Medicare system paid for through social security and taxes; Safety nets for those living 200% below federal poverty line such as Medicaid and SCHIP Pros: • Healthcare services, professionals and other related structures are dictated by the markets, and supply of and demand for • Patient/consumer choice is given premium as individual chooses which coverage	Financing is through differing public means – general taxation only (UK), general taxation with some private insurance (Canada), social health insurance scheme (France, Germany, Japan) Pros: • Same as that of public finance-public delivery • In terms of private healthcare service delivery, patient autonomy in terms of choosing which healthcare provider or professional to come to is supported as there are more choices in terms of providers Cons: • Same as public finance – public delivery system

[87] The Physicians' Working Group for Single-Payer National Health Insurance. Proposal of the Physicians' Working Group for Single-Payer National Health Insurance. *JAMA* August 13, 2003;240(6):798-805

	• For countries with a population structure that is getting older, the tax base is becoming smaller, hence tax revenue reduces as well and this impacts on the amount of funding that is allocated for health which in turn leads to reforms targeting additional or parallel streams of healthcare financing such as social insurance schemes and private insurance • With the introduction of parallel streams of healthcare funding, access to healthcare services may theoretically be impeded based on which services are covered by what funding • Additional streams of funding adds another layer of administrative bureaucracy and costs necessary to determine which insurance covers what cost • There are potential financing holes/gaps that particular subsets of people/population can slip through such as employment status, income level, etc which are factors used to determine which stream funds what services/costs	he/she desires Cons: • Coverage is predominantly determined by employment status and income level • Particular subsets of the population have a disadvantage in acquiring coverage through private insurance. Specifically, those who are poor, unemployed, in poor health and the elderly will have a much more difficult time purchasing insurance on their own	
Cost-sharing, co-payments, user charges	Yes Pros: • Potentially and theoretically can raise additional income to the general tax funds for health • Encourages people to use the public healthcare system more responsibly Cons: • If user fees/charges are high, healthcare service utilization is reduced and users are discouraged from using the services • If user fees/charges are low, very little income is actually generated and the earnings merely offset the administrative costs of collecting the user fees.	Yes. In the form of co-payments and deductibles	No. cost-sharing, co-payments, user charges (UK), Some cost-sharing, co-payments, user charges (Germany, France, Japan)
Healthcare delivery	Public facilities provide care	Private facilities provide care	Private facilities provide care
Payment of service providers	Healthcare providers are compensated mostly through salaries and then partly through capitation, fee for service and allowances	Healthcare providers are paid fee for service through different insurance company mechanisms; some cases, patients pay for service and reimburse for their costs	Healthcare providers are compensated predominantly through salaries and then partly through capitation, fee for service and allowances.

Patient insurance	All patients are insured from outcomes related to medical care; Healthcare providers purchase insurance cover	Healthcare providers purchase insurance cover for malpractice and other untoward outcomes related to medical care and this costs is ultimately passed on to the patients	Insurance cover is paid for by the system.

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