FRANCE AND GERMANY AS U.S. ROLE MODELS FOR LOWERING HEALTH EXPENDITURES

Michelle Fu

Culminating Experience

Master's in Public Health

June 2020

Abstract

OBJECTIVE: To examine the historical development of the German and French health care systems and how their financing and expenditures might inform policy reform for the U.S.

METHODS: Available OECD data on health status, health expenditures, and medical supply factors in France and Germany are presented as comparisons to the U.S. Structural characteristics of each countries' systems were explored based on a literature review of historical context and financing of their healthcare systems. Indicators of health expenditures such as hospital utilization, physician renumeration and pharmaceutical costs were compared to the U.S.

RESULTS: The German "sickness funds" model of insurance differs from the French reliance on national health insurance. The U.S. spends a much greater percentage of GDP, has much higher health expenditures per capita than its counterparts, and a lower proportion of U.S. residents have health insurance than France and Germany. The main drivers of health expenditures in the U.S. include administrative costs of operating the multi-payer system, lack of price regulation, privatized costs in medical education, and higher physician salaries and pharmaceutical costs.

DISCUSSION: The experience of national health insurance systems in Germany and France shows that expanding risk pools for health insurance can simplify systems, provide coordinated care, decrease health expenditures, and prohibit incentives to market to the most affluent privately insured patients. To emulate the successful French and German systems there would need to be a major restructuring of the U.S. healthcare system perhaps creating not-for-profit, private entities within an existing public program, a model similar to the German sickness funds.

I. Introduction: France, Germany, and the U.S.

National Health Insurance (NHI) Structure

Both France and Germany have a compulsory, universal health insurance program implemented in the country with a mix of public and private providers. The national health insurance (NHI) systems in France and Germany are often also referred to as the statutory health insurance (SHI) because they are mandatory across the nation. In France and Germany, all legal residents of the country are covered by the compulsory, SHI system.

These healthcare systems both started on the Bismarck model of social health insurance and continue to use wage-based contributions as a major source of funds to pool together the risks of members who contribute to the funds and extend health coverage to those who cannot contribute. However, the countries have different governing bodies, financing and organizing structures within their respective National Health Insurance programs. In France, the statutory health insurance program is housed as one of the various benefits in the nation's social security insurance program. Thus, the state has a larger governance role in France than in Germany, with Germany's predominant financing method for the public sector coming via sickness funds, represented by self-regulating not-for-profit entities.

U.S. Multi-payer Healthcare System

Structurally, France and Germany have different methods for financing and organizing their respective healthcare systems, but the U.S. can learn from these two countries on how to lower health expenditures. The U.S. spends more on health per capita, spends more on health as a percentage of GDP and insures less of the population than in Germany and France (Table 1.3, Table 2.4, Table 4.2) with worse health measures such as life expectancy and mortality rates (Table 5.4).

This study attempts to explain the drivers of healthcare expenditures in the U.S. as it compares to France and Germany and how the French and German models can help the U.S. reduce these costs, especially in the realms of the pharmaceutical prices, medical procedural prices and healthcare administration.

II. France

France – Historical Context

The healthcare systems that now thrive in France and Germany can be traced back to the 19th century, and the major credit is given to the German Chancellor Otto von Bismarck [1]. Bismarck implemented the Health Care Act of 1883 which successfully established the first social health care system in the world. His healthcare model utilized occupation-based contributions from both employers and employees to create social funds. This was and still stands as an effective method for pooling together the risk for large groups of people into one large sum. Ultimately, this formed the foundation for what remains the majority of public sector revenue for both France's and Germany's healthcare systems. With unique economic situations and subsequent policy reforms, the distinct healthcare systems have different ways of structuring resident-based coverage, financing the funds, regulating the system, but both require, by law, coverage for healthcare services to nearly every permanent resident of these countries, regardless of individual country of citizenship or, unlike in the U.S., employment status.

France – Guiding Principles and Social Security

A key cultural aspect of the French healthcare system are the principles that guided the system's development and reforms: liberalism and pluralism [2]. Stemming from the liberal code of medicine developed in the 1920s, the principle of liberalism was applicable in providing patients the freedom of choice of their physician, and for the physician to choose their location of

practice [3]. This was further ensured through the direct payment of health services from the patient to the physician, based on the fee-for-service payment structure. Pluralism helped frame the diversity in where individuals could seek care, ranging from office-based solo practices, group practices, and public sector hospitals. Solo practices typically dominated ambulatory, or outpatient, care and the public sector hospitals were the primary location for hospital care [2].

Starting in 1928 France first rolled out its first National Health Insurance (NHI) program, provided to salaried, industrial and commercial workers and their dependents so long as the worker's salary was under a low salary ceiling threshold [4]. This NHI program continued to expand in small increments, in 1961 to farmers and agricultural workers, in 1966 to self-employed, non-agricultural workers [IBID]. In 1974 a new law declared NHI as universal, extending coverage to individuals who did not fall under any of the previous categories and were uninsured, but it would take until January 2000 for the health insurance coverage to be provided to all individuals so long as they were permanent residents of France.

A part of the French motto is égalité, or equality, which is the idea that governance should enable and protect rights and opportunities for its citizens [5]. When France's first social security system was created in 1945 to when the first social security reform was enacted in 1967, the health care system became just one of the several components under the organization of social security provided to the population at large [6]. More specifically, this new system included pensions, family allowances, and health insurance and occupational accident coverage, with the first two covered by a single national fund. The latter group of health insurance and workplace incidental coverage is covered by three main funds, broken down into the categories of salaried workers when the NHI program first began: for salaried workers in general, for farmers and agricultural workers, and for the workers in independent professions. For workers in

other occupations, there are a handful of smaller funds allocated for them and their dependents. These NHI funds are quasi-public as they are supervised by the government in charge of French social security, but the funds themselves are under the jurisdiction of local private organizations.

France - Health Reforms

Compared to other social insurance systems based on the Bismarck, employment-based, model, the French state plays a larger role. Further reforms confirmed this idea, with an emphasis on tax-based revenue rather than payroll deductions for financing health care. Starting in the 1970s, healthcare expenditure was increasing at a faster rate than economic growth, thus necessitating reforms to increase compulsory social contributions [7]. After the attempt to raise revenue for the funds did not suffice, efforts were made to contain costs through limiting the health budget and reducing mandatory health insurance coverage. Ultimately these reforms did not prevail as expenditures continued to grow, but in 1990 a new tax was introduced that shifted the financing from employee contributions to a levy on all income and to be used for welfare programs [8]. This new tax continued to increase over the next few years, and now reflects a third of funding for health expenditure with 50% from employer and employee payroll taxes, 13% from the pharmaceutical industry and voluntary health insurance companies, and 2% from state subsidies [9].

Concurrently throughout the 1990s, several reforms aimed at shifting authority from the national to the regional level, especially for health planning [2]. Regional institutions were established to represent the main health service stakeholders such as the state, health professionals, public health actors, and the statutory health insurance (SHI) schemes. In 1996, the Juppe government organized a new national agency, *Agence National d'Accréditation et d'Évaluation en Santé,* to promote health care evaluation, establish medical practice guidelines,

prepare hospital accreditation procedures, and create new regional hospital agencies [4]. This ultimately developed into the Hospital, Patients, Health and Territories Act in 2009 which merged these institutions into a single regional health agency (*agence régionale de santé; ARS)* to further improve efficiency of by introducing integrated care to health care services, long-term care for older people and people with disabilities, and public health services.[10]

France - Social Security and the State's Role

The social security program in France provides compulsory protection to the domains of health care provision, work-related illness and injuries, pensions and family allowances. France's healthcare system is thus housed within the social security program which is guaranteed to all legal residents of the country. To acquire this residential status, one must be a spouse of a French citizen for more than one year, mother, father or child of a French citizen; can acquire after ten years of lawful residence; or "be a refugee with convention status and family members of such persons and recognized stateless persons with three years regular residence in France" [11].

The Ministry of Health oversees these domains covering public health policy and provision, social security, and social policy [12]. Specifically, the Ministry of Health plays a large role in the planning and regulation of healthcare around the country such as distributing the resources among the various sectors, approving agreements signed between SHI and health care professionals in private practices, and setting program priorities.

France - Financing

When looking at the distribution of health expenditure throughout the country, about 77% of total health expenditures were publicly financed in 2014 [9]. The public statutory health insurance (SHI, or *assurance maladie*) covers the resident population in France and can be broken down into several categories as shown in Table 1.1.

SHI funds are supervised by the government overseeing the French social security system. A comprehensive breakdown of the schemes is shown in *Table 1.2.* The three main funds or schemes provide health coverage for salaried workers (*Caisse Nationale d'Assurance Maladie des Travailleurs Salariés,* or CNAMTS), for farmers and agricultural workers (*Mutualité Sociale Agricole*, or MSA), and for the self-employed workers (*Caisse Nationale d'Assurance Maladie des Professions Indépendentes*, or CANAM) reflecting the gradual roll-out of health coverage for the nation. For workers in occupations not covered by the categories listed, there are eleven smaller funds allocated for them and their dependents.

Table 1.1: Overview of Mandatory Health Coverage Systems in France

Mandatory health coverage systems	Description	Managing agency	% of population covered	Sources of financing		Benefit package	Payment mechanisms
General scheme	Health coverage for salaried workers and their families	Caisse Nationale d'Assurance Maladie des Travailleurs Salariés (CNAMTS)	84.1%	Payroll taxes, representing 0.75% of gross salary for workers and 12.8% for employers for the general scheme and the salaried agricultural workers	"Contribution Sociale Généralisée" (CSG) representing 5.25% of labour revenues and 5.75% of capital revenues	Outpatient care Medicine and medical goods Inpatient care	***Patients:*** ***Copayments***: 30% for outpatient care, 20% for inpatient care and "forfait hospitalier" (15 Euros daily charge) *Providers:* Payment of public and private hospitals participating in the public hospital service through the "Tarification à l'Activité" (T2A) since 2007[41] Payment of self employed professionals and private hospitals through a ***fee for service*** fixed by convention with the health insurance. Possibility of exceeding fees for doctors in "Sector 2[42]"
Agricultural scheme	Health coverage for farmers, agricultural employees and their families	Mutualité Sociale Agricole (MSA)	6.1%	Payroll taxes, representing 10.8% of net salary for farmers			
Scheme for non-agricultural self-employed people	Health coverage for craftsmen and self-employed people	Caisse Nationale d'Assurance Maladie des Travailleurs indépendants et Artisans (CANAM)	4.9%	Payroll taxes, representing 5.9% to 6.5% of professional income			
Other statutory schemes	Health coverage for some public sector employees	Fund for each scheme	3.5%	Payroll taxes specific to each schemes			
"Couverture Maladie Universelle" (CMU)	Health coverage for people who cannot be covered by the social security system	Fund CMU	2.2%	Government revenues, affected taxes (alcohol, tobacco) and contributions representing 8% of total revenues for people whose revenue exceeds 8,774 Euros per year (1/10/2008-30/09/2009 period)			
"Aide Médicale d'Etat" (AME)	Health coverage for people in an irregular situation and without resources	Fund CMU	0.3%	Government revenues			

Source: [13]

The CMU (*Couverture Maladie Universelle* or universal health coverage) Act offers SHI coverage is extended to all individuals who legitimately reside in France with free CMU coverage for households with household income up to an established income threshold €9534 in 2013–2014 [2]. Other working, legal resident beneficiaries of CMU coverage must pay an annual premium of about 8% of household income which their employers also match [IBID].

The SHI roughly reimburses 75% of all overall individual healthcare costs, with the remaining 25% consisting of co-payments for medical goods and service that are not covered at all or very poorly covered by this public system [14]. Individuals who have serious diseases are exempted from co-payments so long as the condition is included in the official list of Affections de longue durée, or ALD [15]. As a method of limited expenditures, the government raised co-payments and decreased reimbursements for health services. Between 2006 and 2013, the share of health expenditure financed by SHI declined slightly from 78.2% to 77.4% and the share of health expenditure financed by private insurers increased from 13.0% to 13.8% [16].

France - Private Health Insurance

Private health insurance is also referred to as complementary health insurance (CHI, or *assurance complémentaire*). These insurance companies mainly function as offering coverage for services and medications that are not or poorly covered by social security [12]. In 2010, 96% of individuals owned a CHI contract [16]. The CHI plays a major role in financing auxiliary healthcare service such as dental services, prosthetics, glasses, contact lenses, and hearing aids [16]. French constituents with low income are entitled to free or state sponsored CHI. Two CHI schemes to support the lowest income individuals are couverture maladie universelle complémentaire *(CMU-C)* which provides free CHI to those who live below 20% of the poverty level and assistance in financing complementary health insurance (*ACS)* which provides vouchers that pay CHI premium for those who are above the threshold qualifying for CMU-C. CMU-C only covers about 7% of the French population [15] Those who do not qualify for the state sponsored CHI can buy complementary insurance policies from a mutual benefit organization, or *mutuelle,* or a private insurance company. In 2013, *mutuelle*s accounted for 54%

of CHI revenue, non-profit provident institutions accounted for 18%, and private for-profit insurance companies accounting for the remaining 28% [16, 17].

The two types of private insurance contracts are employer-based (group) contracts or individual contracts purchased directly by the insured [16]. In 2009, 44% of private sector employers offered CHI to their employees; 94% of these employers partially financed the premiums, with an average covering 56% of the cost [17]. Starting in January 2013, the French government mandated all private sector employers to offer private complementary health insurance to their employees by January 2016 under the National Interprofessional Agreement, or *Accord National Interprofessionnel* [16]. Under the *Accord National Interprofessionnel (ANI),* employers pay at least half of the CHI and must respect minimum coverage requirements for coverage. This coverage lasts at least 9 to 12 months after the last employment contract, in the case of unemployment or retirement.

France - Providers and Payments

There is a combination of private and public sector hospitals and ambulatory care providers, with several methods of remuneration. The vast majority of outpatient care is provided by health professionals in a private practice setting. Private general practitioners (GP's) are paid fee-for-service, or *rémunération à l'acte,* which means a predetermined value for each type of service multiplied by the number of patients that were given this service [12]. Fee-for-service is also used to compensate for private ambulatory care and for public hospitals. However, public hospitals can also be compensated based on annual global budgets negotiated between hospitals, regional agencies, and the Ministry of Health [4]. In the ambulatory care sector, patients typically pay physicians directly and then later are reimbursed by insurance funds.

Diagnosis Related Groups (DRG's) and pay-for-performance were introduced as new methods for provider remuneration based on healthcare activities. Starting in 2004, a DRG-based payment was introduced for acute services in all hospitals [18]. These diagnosis-related groups (DRG; *Tarification à l'activité* or T2A) are set based on patient diagnosis, length and type of care with the goal to improve hospital efficiency, transparency and fairness in payments to both public and private hospitals. However, this payment method relies on accuracy and consistency of patient classification. As a rather new system, the constant changes to the classification thus changes DRG's, making it difficult to ensure all hospitals have the most recent updates. Individual contracts with general practitioners utilize pay-for-performance (P4P; *rémunération à la performance*). This additional payment method is a financial incentive for these GP's to improve quality and efficiency by establishing objectives and quality of care targets for physicians to meet.

Table 1.2: Provider Payment Mechanisms, France

Provider/payers	*Central SHI Institution*	*Private CHI*
GPs	FFS, T2A, P4P	FFS
Public hospitals	T2A	T2A
Private hospitals	T2A	T2A, FFS
Pharmacies	Mark-ups on regulated prices + dispensing fees + P4P	Mark-ups on regulated prices + dispensing fees + P4P

Source: [2]

Table 1.3: Health Expenditures, France

	2013	**2014**	**2015**	**2016**	**2017**
All Health Expenditure					
% of GDP	11.4	11.6	11.5	11.5	11.3
Per capita ($)	3,975.696	4,051.296	4,088.34	3,071.196	4,193.64

Government/Social Insurance					
% of total population	99.9	99.9	99.9	99.9	99.9

Source: OECD Data, 2020

Table 1.4: Medical Supply, France

	2013	2014	2015	2016
For-profit privately-owned hospitals				
Number	1,022	1,012	1,009	1,003
Per million population	15.54	15.26	15.16	15.03
Not-for-profit privately-owned hospitals				
Number	712	683	690	686
Per million population	10.83	10.3	10.37	10.28
Practicing physicians				
Density per 1000 population	3.1	3.11	3.12	3.14
Number of persons	204,129	206,159	207,789	209,367
Publicly owned hospitals				
Number	1,458	1,416	1,389	1,376
Per million population	22.17	21.35	20.87	20.62
Total health and social employment				
% of total civilian employment	13.89	14.03	14.13	14.14
Density per 1000 population	57.43	57.83	58.14	58.45
Number of persons	3,777,000	3,835,000	3,869,000	3,900,000

Source: OECD Data, 2020

III. Germany

Germany – Constitution and Principles

Along with Otto von Bismarck's model for healthcare, Germany's system also derives from the Basic Law for the Federal Republic of Germany, *Grundgesetz für die Bundesrepublik* [19]. This constitution written in 1945 gives the state the obligation to provide social services to its constituents, specifically ensuring sufficient, needs-based ambulatory and inpatient medical treatment and guaranteeing the provision of medicine [20]. This obligation fulfills the principle of meeting the needs of the individuals, *Bedarfsdeckungsprinzip*. However, the federal government can either assume this duty itself or delegate to state governments or institutions. In

the realm of healthcare, the latter prevails as the government creates service guarantee contracts with these regional leaders, who then contractually obligate healthcare providers and facilities to deliver these promised services. The government's decision to delegate reveals another main principle of self-governance which also plays heavily in the German healthcare system. Because the government outsources public administration to health insurance companies and other associations of the Social Health Insurance (SHI) physicians, these statutory corporations function as indirect, self-governing authorities.

Additionally, the principle of solidarity, or *Solidarprinzip,* is especially important to the Germany healthcare system as it is fundamentally related to Bismarck's model of social health insurance. With solidarity, every citizen of the country is entitled to assistance from other members of the society through the Social Health Insurance (SHI) program through the pooled funds contributed by every member of these funds.

In 2004, the principle of self-governance was strengthened through the establishment of the Federal Joint Committee. This Committee formed a major payer-provider structure and represented a multitude of stakeholders including physicians, dentists, hospitals, health insurers, and patients. This self-governing body thus has the authority to define the rules for access, the distribution of healthcare and benefits coverage, and the coordination of care between various providers. On January 1, 2009 compulsory health insurance was introduced to all residents in the Federal Republic of Germany [19]. In 2012, about 85% of the German population was covered through SHI funds, 11% by the PHI scheme, and the remaining 4% covered by governmental schemes (military, police, social welfare) [1].

Germany – Policy Reforms

Similar to France's trajectory of introducing universal health coverage, Germany also undertook a gradual expansion process to cover the entire population with a generous benefits package. Germany's health insurance coverage comes in the form of "sickness funds" which are not all too dissimilar from France's quasi-public NHI funds. The sickness funds are not-for-profit entities that collect wage taxes from members and serve as the financial mediator between members of the funds and healthcare providers. Parallel to the occupation-based coverage that was first apparent in France, the two main types of sickness funds cover necessary health services for specific salaried workers regardless of their ability to pay for these services. The tens of thousands of small sickness funds in 1911 were condensed to a few hundred in 1996 [21] to ease administrative costs.

In 1993, residents of Germany had the freedom to choose their specific sickness fund [22]. In 1996, an insuree was free to switch between various health insurance companies and between sickness funds on a yearly basis with a three months' notice [1, 19]. Since 2002, an insuree must remain within a particular sickness fund for at least 18 months before switching sickness funds [1]. This provided individuals liberty of choice, especially since insurance funds are contractually obliged to accept any applicant, regardless of health risk profile.

Following the freedom of choice for an individual to choose their sickness fund, the Risk Adjustment Scheme (RAS) was implemented in 1994 to adjust differences in risk pools across sickness funds [23]. The RAS adjusted based on the factors of age, gender and disability status. In the past, sickness funds had been based on occupation, thus creating risk pools differing by socio-economic status, shown in *Figure 1.1*. This ultimately meant pools of riskier insures had to pay higher prices.

Figure 2.1: Former Types of Sickness Funds by Occupation/Industry

German name	English translation	Abbr.	History and enrollment
Bundesknappschaft	Federal Miners' Guild	BKN	Miners and relatives. In 1995: 1.2M enrollees. 4.8% female, age 42.4, gross wage €3719, 59.3% blue collar, disabled: 3.7%
Innungskrankenkasse	Guilds' Sickness Fund	IKK	Craftsmen and relatives. In 1995: 2.9M enrollees. 12.7% female, age 37.2, gross wage €2692, 78.9% blue collar, disabled: 4.6%
Betriebskrankenkassen	Company Sickness Fund	BKK	Employees and relatives. In 1995: 5.2M enrollees. 23.9% female, age 39.5, gross wage €3309, 49.1% blue collar, disabled: 5.8%
Ersatzkassen für Arbeiter	Alternative Funds for Blue Collar Workers	EAR	Blue collar workers prior to 1883. In 1995: 0.9M enrollees. 17.7% female, age 38.0, gross wage €2854, 86.4% blue collar, disabled: 7.3%
Ersatzkassen für Arbeitnehmer	Alternative Funds for White Collar Workers	EAN	White collar workers prior to 1883. In 1995: 17.5M enrollees. 42.7% female, age 39.5, gross wage €3370, 4.4% blue collar, disabled: 5.9%
Allgemeine Ortskrankenkassen	General Town Sickness Funds	AOK	Blue collar workers who could not be assigned. In 1995: 22.3M enrollees. 25.5% female, age 39.7, gross wage €2610, 74.2% blue collar, disabled: 6.7%

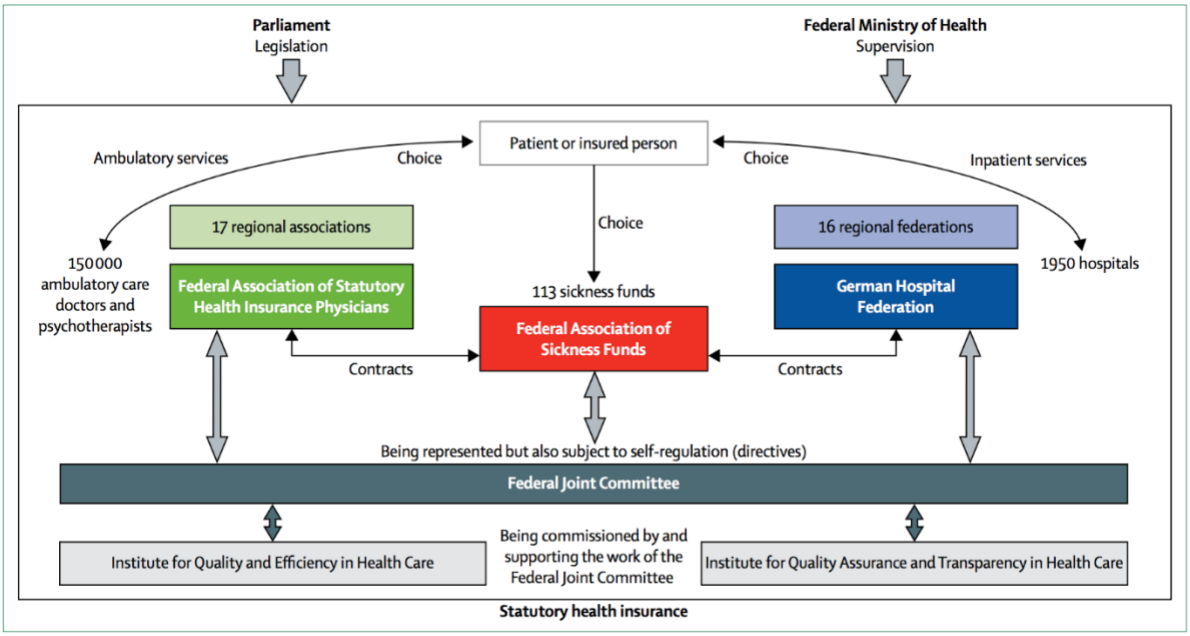
Source: [23]

Germany – Sickness Funds

In Germany, these "sickness funds" form the basis of providing public sector healthcare. These funds are governed by not-for-profit, nongovernmental agencies that collect wage taxes from members, directly deducted from employees' paychecks. Uniquely, these funds are the ones to directly transfer money to the healthcare providers, instead of reimbursement to its members [24]. The wage-based taxes are half paid by employers and the other half paid by the employee, with the rate as a percentage of the employee's income up to an income ceiling. Since 2016, there have been a total of 116 sickness funds [1]. Each sickness fund stipulates the same rate for all its members; thus, the fund cannot discriminate based on the number of dependents of the member, the age of dependents or health status. However, the contribution rate does differ from one fund to another, based on the health-risk membership profiles of the funds, with contributions typically ranging from 10-15% of the employee's income shared by the employer and employee (IBID). The two main types of sickness funds include the principal funds and alterative funds. The former cover primarily blue-collar workers and the latter covers primarily white-collar workers. The remaining citizens typically purchase health coverage from private insurance companies. Once a member of a fund retires, the retiree remains in the fund to which they belonged at the time of retirement and those who were privately insured remain in the same

status as well. For non-employees such as students, individuals who are unemployed and pensioners are all required to obtain SHI coverage.

Figure 2.2: Key Actors in German SHI system



Source: [22]

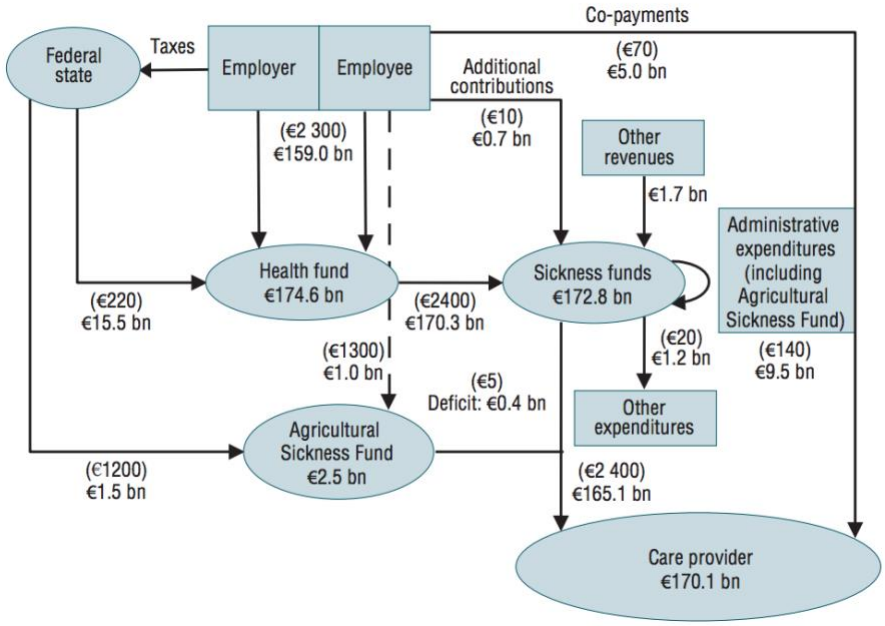
Germany - Private Insurance

If an employee's gross income is greater than a threshold for three calendar years in a row, the employee may opt-out of the SHI scheme and purchase private insurance [1]. Privately insured members pay a premium, but the employer pays a maximum amount equivalent to if the employee were in a statutory fund. This means that the employee must pay the remainder of the premium, or if they are self-employed, the individual pays the full premium themselves. Unlike sickness funds where higher-risk individuals can choose sickness funds with fixed contribution rates, private insurers determine premiums actuarially, thus can attract low-risk individuals.

Germany - Financing

In 2012, public sources of revenue accounted for 72.9% of total expenditure on health in Germany. Specifically, from public sources: 57.4% was contributed through SHI, 10.7% contributed through social security (statutory retirement insurance; statutory insurance for occupational accidents and disease; and statutory long-term care insurance). Governmental sources contributed another 4.8% [1]. Private sources of revenue, including out-of-pocket expenditures and private insurance costs, accounted for 27.1% of total health expenditure.

Figure 2.3: Financial Flows of German SHI



Source: [1]

Germany – State's Role

In Germany, the state's role is minimal – as it sets regulations for which services are provided, but it does not play an active role in administering services or payments. Expenditure decisions are settled between insurers and providers, specifically the state association of Statutory Health Insurance and the association of SHI-physicians [19]. Ambulatory care through physicians in private practice are paid on a fee-for-service basis, but these fees are lowered if

utilization rates rise above project levels and the budget cap is exceeded. Additionally, physicians must be part of a SHI-physician association, *Kassenarztliche Vereinigungen* or KV, in order to receive payment for treated statutorily insured patients [24]. These physician associations are in charge of claims, billing, and physician profiling to keep track of the number of procedures over a certain period of time or the number of procedures provided to a patient to deter excess utilization.

Germany – Payment

Until 1992, hospitals, however, were paid at an all-inclusive per diem rate, a result of negotiations between sickness funds and hospitals [24]. This basic payment method was combined with the cost of certain procedures that are paid out according to a predetermined, fixed amount per service. Starting in 2004, all acute hospitals gradually implemented a DRG system for remuneration, similar to what was implemented in France [1]. The DRG system created budgets for universal, performance-related case fee payment.

Table 2.4: Health Expenditures, Germany

	2013	2014	2015	2016	2017
All Health Expenditure					
% of GDP	10.9	11	11.1	11.1	11.2
Per capita ($)	4,137.59	4,235.98	4,469.58	4,612.57	4,816.15
Government/Social Insurance					
% of total population	89	89.1	89.2	89.3	89.4

Source: OECD Data, 2020

Table 2.5: Medical Supply, Germany

	2013	2014	2015	2016
For-profit privately-owned hospitals				
Number	1,335	1,323	1,323	1,318
Per million population	16.55	16.34	16.2	16.01
Not-for-profit privately-owned hospitals				
Number	1,023	997	979	989
Per million population	12.69	12.31	11.98	12.01

Practicing physicians				
Density per 1000 population	4.04	4.11	4.14	4.19
Number of persons	325,407	332,695	338,129	344,755
Publicly owned hospitals				
Number	825	818	806	793
Per million population	10.23	10.1	9.87	9.63
Total health and social employment				
% of total civilian employment	12.28	12.54	12.89	13.16
Density per 1000 population	64.42	66.09	67.95	69.73
Number of persons	5,195,000	5,352,000	5,551,000	5,742,000

Source: OECD Data, 2020

IV. United States

U.S. – Historical Context

In the 19th century, large US companies, such as coal mining and railroad companies. provided medical services directly to their employees through company doctors [25]. To cover these services, fees were taken directly from their pay. Then the Great Depression put many Americans out of employment and those of older age suffered. Consequently, the Social Security Act was enacted in 1935, becoming a decisive national welfare program [26]. However, to appease conservatives, Congress excluded agricultural and domestic workers from receiving coverage from this act [27]. In 1930, 9% of the U.S. population was African American and 21.4% of employed individuals were working in agricultural occupations, so this clause excluded some of the neediest individuals.

After World War II and demand for labor surged, Congress passed the Stabilization Act of 1942 to freeze wages and salaries, including direct and indirect remuneration to employees [28]. However, health benefits were exempt from this freeze. Within the same year, the Revenue Act of 1942 was enacted which allowed for benefits packages to be excluded from employer profits so that insurance benefits became not taxable income [IBID]. This resulted in the rise of private, employer-based health insurance to further attract labor.

Due to the inadequacy of public health care for the poor and the elderly, Congress passed legislation that established publicly funded Medicare and the Medicaid programs in 1965 under the Social Security Act [29]. If individuals meet eligibility criteria, these public programs provided health coverage for them.

In 2010, the Affordable Care Act continued to address issues of health care costs and quality of care with three provisions [30]. The first provision incorporates private insurance market regulation to prevent discrimination based on pre-existing conditions. The next was the individual mandate or requirement for legal residents to obtain health insurance or incur a fee. The last provision expanded the Medicaid program to serve uninsured individuals at a higher income level.

Ultimately, the U.S. has a multi-payer healthcare system because there are publicly funded and privately funded entities. The financial flow of funds between providers, insurers, individuals/businesses and the government is shown in Figure 4.1. The system in the U.S. is heavily dominated by the private insurance companies. In 2018, 91.5% of the U.S. population had some type of health insurance, leaving 8.5% uninsured [31]. For individuals with health insurance, 67% had private insurance and 34% were a part of a public plan.

U.S. – Public Insurance Programs

The main publicly funded programs in the U.S. healthcare system are Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), and the VA for veterans and CHAMPS for active duty military. The government performs the administration function of reimbursement for services by enrollees of these programs.

Medicare covers individuals over 65 years of age and younger individuals who are disabled, providing coverage to over 55 million people and forming the largest public coverage

program [25]. This program is financed by federal income taxes and through payroll taxes by employers and employees. Individual enrollees pay for premiums as well.

Medicaid is the program designed for younger individuals with low-income and disabilities. The administrative duties are performed by the states and District of Colombia with the option to expand eligibility within their respective states at the jurisdiction of the state which would thus cover more individuals by lowering the income eligibility threshold. The program is jointly financed by the state and the government as the federal government matches at least 100% of every state dollar spent on Medicaid [25]. Overall, the federal government funds 57% of Medicaid costs and 95% of ACA Medicaid expansion costs.

Other public programs provide coverage for additional individuals who may require assistance obtaining health insurance. State Children's Health Insurance Program (SCHIP) provides health insurance to children whose parents do not qualify for Medicaid but may not be able to afford private insurance either. The Department of Veterans Affairs (VA) Health Care System is a system of care that is fully funded by the federal government [32]. However, eligibility criteria limit coverage only to those who have a service-related disability or financial need [33].

U.S. – Private Insurance

Private insurance is administered through insurance companies that reimburse providers for providing care to privately insured patients. The two main types of private insurance are employer-sponsored and non-group, individually purchased insurance. These insurance plans can be administered through private for-profit and not-for-profit companies. Employer-sponsored insurance is also referred as the group market, as employers include health insurance as part of the benefits package for employees. An employee's total compensation is comprised of wages

and benefits. The employer pays the majority of the premium and the remainder of the premium is paid by the employee, typically deducted directly from the paycheck. This automatic payment to insurance premiums means reduced wages from the employee's paycheck, a form of hidden taxation as workers see stagnant wages while health benefit costs rise on behalf of insurance company profitability.

The coverage, benefits, and reimbursement rates depend on the health insurance plan. There is incentive for this employer-based insurance option because it is tax-free compensation, thus taxpayers subsidize benefits for the most affluent members of society not received by lower income self or unemployed.

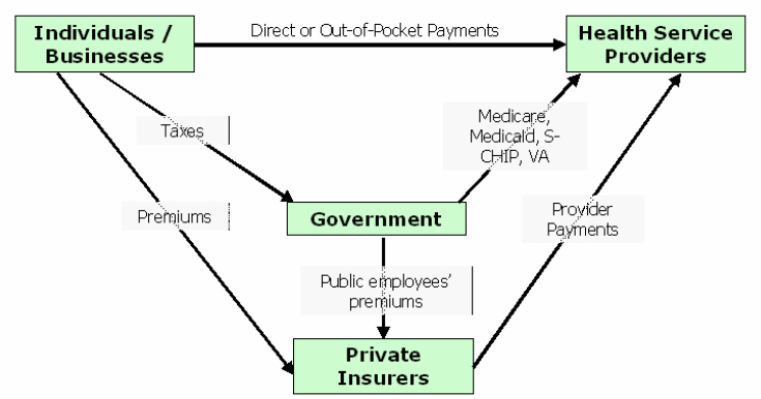
However, there have been declines in employment-based health insurance as the proportion of Americans who were covered by employment-based health plans decreased from 13.1% between 1987 and 2017 [34]. This may be explained by the fewer number of U.S. private workplaces offering at least one health plan, declining since the early 2000s and further decreasing after the recession, with the decrease especially concentrated in small workplaces. In addition, many employers adopted less-attractive plans with more restrictive health care networks and higher deductibles. Simultaneously, the rising costs of premiums further discourages employers to provide health care to their employees. The average annual health insurance premium for a family of four increased drastically from $9,068 to $18,142 between 2003 to 2016 [34]. In 2019, the average annual premium was $7,188 for an individual and $20,576 for a family of four for employer-sponsored coverage [35]. The high cost of premiums forms a perverse incentive for employers to provide health insurance to low-wage workers.

Private insurance companies provide employer-sponsored group and individual market plans. There are two types of group plans, large group and small group with the latter specifically for employers with less than 50 employees [IBID]. Small group and individual plans require

more underwriting, and thus administrative costs, to create plans for less risk and less costly groups and individuals.

Non-group, individual market insurance covers individuals who are self-employed, retired, or may not be able to obtain health insurance from their employer. This type of plan unfortunately allows insurance companies to deny coverage to individuals based on risk, such as from a pre-existing condition. Individuals must pay for their insurance premium out of pocket, with the amount depending on risk and health status of the individual.

Figure 4.1: Financial Flow, U.S. Healthcare System



Source: [25]

Table 4.2: Health Expenditures, U.S.

	2013	2014	2015	2016	2017
All Health Expenditure					
% of GDP	16.3	16.4	16.7	17.1	17.1
Per capita ($)	8,628.60	9,042.30	9,505.10	9,903.70	10,206.50
Government/Social Insurance					
% of total population	33	34.5	35.6	36.3	35.9

Source: OECD Data, 2020

Table 4.3: Medical Supply, U.S.

	2013	2014	2015	2016
For-profit privately-owned hospitals				
Number	1,221	1,215	1,204	1,203

Per million population	3.86	3.81	3.75	3.72
Not-for-profit privately-owned hospitals				
Number	3,024	2,988	2,957	2,958
Per million population	9.56	9.38	9.21	9.15
Practicing physicians				
Density per 1000 population	2.56	2.57	2.58	2.58
Number of persons	809,845	820,251	827,261	835,987
Publicly owned hospitals				
Number	1,441	1,424	1,403	1,373
Per million population	4.56	4.47	4.37	4.25
Total health and social employment				
% of total civilian employment	13.38	13.18	13.3	13.41
Density per 1000 population	61.86	61.44	62.53	63.66
Number of persons	19,562,000	19,576,000	20,076,000	20,589,000

Source: OECD Data, 2020

V. Discussion: Implications for the U.S.

Compared to France and Germany, the U.S. has a higher percentage of uninsured individuals out of the total population. In 2017, the percentage of the U.S. population with health insurance was 90.8% compared with 99.9% insured in France and 100% insured in Germany [31, 36]. Yet in the same year, the U.S. spent 17.1% of GDP on health expenditures compared to 11.2% in Germany and 11.3% in France. However, the utilization of various services is comparable between these countries as shown in Table 5.1, thus revealing that volume of services consumed are not necessarily higher in the U.S. and prices are the drivers of higher health expenditures. From 2012 to 2019, a literature review on waste in the U.S. healthcare system amounting to between $760 billion and $935 billion annually [37]. The six categories of waste include failure of care delivery, failure of care coordination; overtreatment or low-value care; pricing failure; fraud and abuse; and administrative complexity [IBID].

Table 5.1: Health Service Utilization Rates, France, Germany, U.S.

	France	Germany	U.S.
Cataract surgery			

Surgical procedures per 100,000 Population	1207	1027	1110
Cesarean delivery			
Surgical procedures per 100 live births	21	31	33
Computed tomography			
Examinations per 1000 Population	197	144	245
Coronary angioplasty			
Cardiovascular procedures per 100,000 population	237	393	248
Coronary artery bypass graft surgery			
Cardiovascular procedures per 100,000 population	20	64	79
Hysterectomy			
Surgical procedures per 100,000 women	182	301	266
Magnetic Resonance Imaging			
Examinations per 1000 Population	105	131	118
Total hip replacement			
Surgical procedures per 100,000 Population	236	283	204
Total knee replacement			
Surgical procedures per 100,000 Population	145	190	226

Source: [38]

Cross-National Differences

France, Germany, and the U.S. have structural differences to their respective health care systems that explain the difference in health expenditures. The government plays a large role in regulating prices in France and Germany, while the U.S. lacks overall regulation in many areas of healthcare. The large private health insurance sector in the U.S. healthcare system contributes to the inability to regulate the cost of health services. One method for driving down costs in the U.S. system is through price and quality of managed care plans which provide competition among insurers, providers, and employers [39]. These managed care organizations form contracts with large employers who account as the major purchases of care, which provides to have more influence on competition than providers contracted with the managed care organizations [IBID].

Pharmaceutical prices and physicians' salaries are consistently on the rise as well [38]. Physician salaries in the U.S. for generalist positions are significantly higher than those of France and Germany; specialty physicians' salaries in the U.S. are also significantly greater than in France and Germany, as shown in Table 5.2. However, the density of the physician population per 1000 in the general population is lower in the U.S. at 2.58 as compared to 4.19 in Germany and 3.14 physicians per 1000 individuals in France. Additionally, the costs of medical education in the respective countries may contribute to the noticeably different salaries. Aspiring physicians in the U.S. must first go through three to four years of undergraduate school before entering medical school, with estimated average debt ranging from $25,550 to $39,950 depending on college type [40]. Then four years of medical school rack up additional debt, amounting to an average of $180,610 for public medical schools and $203,201 for private medical schools with 76% of medical students graduating with educational debt [IBID]. In Germany, medical universities are tax-funded and thus, the main expense to students is a tuition fee amounting to about 50-90 Euros per semester [40]. The main expense for medical students in Germany is housing costs and other living expenses, depending how expensive the city is. Similarly in France, a year's tuition fees typically cost around 200 Euros per year, so the primary expenses come from living costs depending on where the school is located [41].

Table 5.2: Health Professional Remuneration, France, Germany, U.S.

	France	Germany	U.S.
Generalist physicians			
US $	111,769	154,126	218,173
Nurses			
US $	42,492	53,668	74,160
Specialist physicians			
US $	153,180	181,243	316,000

Source: [38]

The pharmaceutical industry is also lucrative, as global sales in 2016 amounted to $1.1 trillion, with one third from the U.S. [42]. The U.S. spends more than twice as much on pharmaceuticals per capita as compared to Germany and France as shown in Table 5.3. Comparing common prescription drug prices, the prices for medications in the U.S. used to treat non-communicable diseases like cholesterol, diabetes, and asthma are significantly greater than prices in Germany and France. Bound to the Modernization Act of 2003, Medicare is unable to negotiate drug prices with drug manufacturers contributing the inability for public programs to influence prescription drug prices [43].

Table 5.3: Pharmaceutical Costs, France, Germany, U.S.

	France	Germany	U.S.
Advair (asthma)			
Price, US $ per mo.	35	38	155
Crestor (cholesterol)			
Price, US $ per mo.	20	41	86
Humira (rheumatoid arthritis)			
Price, US $ per mo.	982	1749	2505
Lantus (diabetes)			
Price, US $ per mo.	47	61	186
Total spending per capita			
US $	697	667	1443

Source: [38]

Policy Reforms

The U.S. has much to learn from Germany and France about lowering health expenditures and improving healthcare for its constituents. There must be greater price regulation and price transparency in the types of procedures or health services and pharmaceutical drug prices which would require a larger system-wide change. In the U.S. healthcare system, providers are reimbursed by insurance companies on a fee-for-service basis which may promote volume and quantity rather than quality [44]. France and Germany utilize

diagnosis-related groups and pay-for-performance methods to promote quality in health services and pre-determine costs for these services with the government playing a role in imposing prices. In the U.S., insurance companies negotiate prices with providers where large network providers have leverage on setting prices.

There is also a need to streamline administrative costs in the U.S. which includes billing, planning, regulating and managing multiple health systems and services. With the U.S.'s multi-payer system, the complexities between types of plans, programs, and types of providers and constantly shifting enrollments and reimbursement routines produces lots of redundant work and often prevents effective care coordination. One main policy reform pushes for a single-payer system through public funding such as Medicare for All to greatly simplify the healthcare system. In a study comparing cost analyses of single-payer plans in the U.S., 86% of economic models presented estimated savings within the first year with potential for long-term cost savings [45]. Specifically, these plans simplified billing and negotiating drug prices and reduced private insurers role in the public system [IBID].

In 2007, $156 billion was spent on health care administration, with 40% of administrative costs for public programs and 60% paid for by employers and consumers in the form of premiums to private insurance companies [46]. Within the jurisdiction of an insurer's operating costs includes marketing, determining eligibility, underwriting, claims processing, and negotiating fees with numerous providers. Per premium dollar, U.S. private health insurers spent an average of 79.7 cents on health care itself, 17.8 cents on the insurers' operating costs, and the remaining 2.7 cent as profits [47]. These private insurers must charge higher premium prices to turn the profit, but at the expense of the insured individual.

Larger group and public programs can benefit from increased risk pooling, similar to the SHI funds in Germany and France. The shared pooled risk of larger groups of individuals also creates larger funds to draw from. Thus, it is proposed that it can beneficial to expand government programs to include more individuals and gradually introduce regulation in private entities. Germany is proof of concept that it is viable to have both public and private insurance sectors for market competition, but the private health sector has strict eligibility criteria to opt in such as the income threshold and the ability to deny care based on individual risk. The German not-for-profit sickness funds provide a model for delegating responsibilities out of the government while still maintaining overarching regulation. Within the proposed Medicare for All program, private, not-for-profit funds could promote a form of regulated market competition.

Table 5.4: Health Status in 2017, France, Germany, U.S.

	France	Germany	U.S.
Infant mortality			
Deaths per 1,000 live births	3.9	3.3	5.8
Life expectancy - female, at birth			
Years	85.6	83.4	81.1
Life expectancy - male, at birth			
Years	79.6	78.7	76.1
Preventable mortality*			
Deaths per 100,000 population	105	121	169

**Causes of death preventable through public health and healthcare measures (such as some cancers, heart attack, stroke, alcohol and drug-related deaths, and some respiratory diseases)*
Source: OECD Data, 2020

Limitations

The proposed policy reforms would require wide restructuring of systems, relying on a larger role of the public health sector in regulation. To lower physician salaries would need to see a change in medical education, undergraduate education, and the significant associated debt to become a physician as well as reduction in the 50% of costs related to administration born by

physician offices. Expanding government programs and improving payment reform will undoubtedly meet backlash by parties whose profits are negatively impacted by these changes. For example, Health care IT and private insurance companies are two areas where current expenditures would be greatly reduced by this reform. However, development of these not-for-profit private entities within Medicare for All would provide additional opportunities and would make the U.S. healthcare system more efficient, decrease overhead costs of administration and improve the care provided to its residents.

VI. Conclusion

In comparison to France and Germany, the U.S. spends more on health expenditure, yet with worse health status and a lower percentage of the population insured, providing insight into the costly, yet inefficient healthcare system in the U.S. The historical context of social security and universal health coverage in Germany and France reveal structural differences to the U.S. as the U.S. did not experience the strong socialist and labor party, or the unified working class that was able to leverage social health benefits as in Germany and France.

There is much the U.S. can learn about how to lower healthcare expenditure based on the role of the governing and financing structures. Major drivers of health expenditure in the multi-payer U.S. healthcare system include the pharmaceutical industry, provider and procedural prices, and overall administrative costs which beg the necessity for streamlining health administration and price regulation and transparency. A large restructuring of the U.S. healthcare system would be required to combat these continually rising costs, but regulated, privatized not-for-profit entities under Medicare for All present a potential solution.

References

1. Busse, R. and M. Blümel, *Health systems in transition.* Germany-Health system review. Technische Universität Berlin. Berlin, 2014.

2. Chevreul, K., et al., *France: Health system review*. 2015, World Health Organization, on behalf of the European Observatory on Health ….
3. Bach, S., *Managing a pluralist health system: the case of health care reform in France.* International journal of health services, 1994. **24**(4): p. 593-606.
4. Rodwin, V.G., *The health care system under French national health insurance: lessons for health reform in the United States.* American journal of public health, 2003. **93**(1): p. 31-37.
5. Roth, M., *"Liberty, solidarity, fairness": A personal view of the French healthcare system.* Cambridge Quarterly of Healthcare Ethics, 2010. **19**(3): p. 329-333.
6. Sandier, S., et al., *Health care systems in transition: France*. 2004, Copenhagen: WHO Regional Office for Europe.
7. Hassenteufel, P. and B. Palier, *Towards neo-Bismarckian health care states? Comparing health insurance reforms in Bismarckian welfare systems.* Social Policy & Administration, 2007. **41**(6): p. 574-596.
8. Palier, B., *'Defrosting'the French welfare state.* West European Politics, 2000. **23**(2): p. 113-136.
9. Durand-Zaleski, I. *The French Health Care System*. International health Care System Profiles [Website] n.d. [cited 2020; Available from: https://international.commonwealthfund.org/countries/france/.
10. Organization, W.H., *Organization and financing of public health services in Europe: country reports*. 2018: World Health Organization. Regional Office for Europe.
11. Groenendijk, K., E. Guild, and R. Barzilay, *The legal status of third-country nationals who are long-term residents in a Member State of the European Union*. 2001: University of Nijmegen.
12. Schweyer, F.X., *Health Care Delivery System: France.* The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society, 2014: p. 802-809.
13. Dukhan, Y., et al., *Financial burden of health payments in France: 1995-2006*. 2010, World Health Organization.
14. Saliba, B. and B. Ventelou, *Complementary health insurance in France Who pays? Why? Who will suffer from public disengagement?* Health Policy, 2007. **81**(2-3): p. 166-182.
15. Dormont, B., *Health insurance, efficiency and equity: French debates.* BELGIUM'S HEALTHCARE SYSTEM, 2011: p. 40.
16. Franc, C. and A. Pierre, *Compulsory private complementary health insurance offered by employers in France: implications and current debate.* Health Policy, 2015. **119**(2): p. 111-116.
17. Pierre, A. and F. Jusot, *The likely effects of employer-mandated complementary health insurance on health coverage in France.* Health Policy, 2017. **121**(3): p. 321-328.
18. Or, Z., *Implementation of DRG Payment in France: Issues and recent developments.* Health policy, 2014. **117**(2): p. 146-150.
19. Döring, A. and F. Paul, *The German healthcare system.* EPMA Journal, 2010. **1**(4): p. 535-547.
20. Quint, P.E., *The Constitutional Law of German Unification.* Md. L. Rev., 1991. **50**: p. 475.
21. von der Schulenburg, J.-M.G. and A. Uber, *Current issues in German healthcare.* Pharmacoeconomics, 1997. **12**(5): p. 517-523.

22. Busse, R., et al., *Statutory health insurance in Germany: a health system shaped by 135 years of solidarity, self-governance, and competition.* The Lancet, 2017. **390**(10097): p. 882-897.
23. Pilny, A., A. Wübker, and N.R. Ziebarth, *Introducing risk adjustment and free health plan choice in employer-based health insurance: Evidence from Germany.* Journal of health economics, 2017. **56**: p. 330-351.
24. Rublee, D., *Health care über alles: how it works in Germany.* Healthcare financial management: journal of the Healthcare Financial Management Association, 1992. **46**(1): p. 40, 42, 44-7.
25. Chua, K.-P., *Overview of the US health care system.* Sterling, Virginia: American Medical Student Association, 2006.
26. Quadagno, J.S., *Welfare capitalism and the Social Security Act of 1935.* American Sociological Review, 1984: p. 632-647.
27. Davies, G. and M. Derthick, *Race and social welfare policy: The Social Security Act of 1935.* political science Quarterly, 1997. **112**(2): p. 217-235.
28. Thomasson, M.A., *The importance of group coverage: How tax policy shaped US health insurance.* American Economic Review, 2003. **93**(4): p. 1373-1384.
29. Marjoua, Y. and K.J. Bozic, *Brief history of quality movement in US healthcare.* Current reviews in musculoskeletal medicine, 2012. **5**(4): p. 265-273.
30. Frean, M., J. Gruber, and B.D. Sommers, *Premium subsidies, the mandate, and Medicaid expansion: Coverage effects of the Affordable Care Act.* Journal of Health Economics, 2017. **53**: p. 72-86.
31. Berchick, E.R., et al., *Health insurance coverage in the United States: 2018.* Current population reports. Washington DC: US Government Printing Office, 2019.
32. Kazis, L.E., et al., *Health-related quality of life in patients served by the Department of Veterans Affairs: results from the Veterans Health Study.* Archives of internal medicine, 1998. **158**(6): p. 626-632.
33. Damron-Rodriguez, J., et al., *Accessibility and acceptability of the Department of Veteran Affairs health care: diverse veterans' perspectives.* Military medicine, 2004. **169**(3): p. 243-250.
34. Lin, K.-H., S. Bondurant, and A. Messamore, *Union, Premium Cost, and the Provision of Employment-based Health Insurance.* Socius, 2018. **4**: p. 2378023118798502.
35. Claxton, G., et al., *Health Benefits In 2019: Premiums Inch Higher, Employers Respond To Federal Policy.* Health Affairs, 2019. **38**(10): p. 1752-1761.
36. OECD, *Social Protection*.
37. Shrank, W.H., T.L. Rogstad, and N. Parekh, *Waste in the US health care system: estimated costs and potential for savings.* Jama, 2019. **322**(15): p. 1501-1509.
38. Papanicolas, I., L.R. Woskie, and A.K. Jha, *Health care spending in the United States and other high-income countries.* Jama, 2018. **319**(10): p. 1024-1039.
39. Dixon, J., et al., *Can the NHS learn from US managed care organisations?* Bmj, 2004. **328**(7433): p. 223-225.
40. Zavlin, D., et al., *A comparison of medical education in Germany and the United States: from applying to medical school to the beginnings of residency.* GMS German Medical Science, 2017. **15**.
41. Segouin, C., et al., *Country report: medical education in France.* Medical Education, 2007. **41**(3): p. 295-301.

42. Dubois, P., A. Gandhi, and S. Vasserman, *Bargaining and international reference pricing in the pharmaceutical industry*. 2019, Working Paper, Harvard University.
43. Frakt, A.B., S.D. Pizer, and A.M. Hendricks, *Controlling prescription drug costs: regulation and the role of interest groups in Medicare and the Veterans Health Administration.* Journal of health politics, policy and law, 2008. **33**(6): p. 1079-1106.
44. Fisher, E.S., J.P. Bynum, and J.S. Skinner, *Slowing the growth of health care costs—lessons from regional variation.* The New England journal of medicine, 2009. **360**(9): p. 849.
45. Cai, C., et al., *Projected costs of single-payer healthcare financing in the United States: A systematic review of economic analyses.* PLoS medicine, 2020. **17**(1): p. e1003013.
46. Collins, S.R., et al., *How health care reform can lower the costs of insurance administration.* 2009.
47. Reinhardt, U., *Where does the health insurance premium dollar go?* Jama, 2017. **317**(22): p. 2269-2270.