# The Use of Explicit Health Benefits Packages Increases Support for Universal Health Care for People with High Objective Numeracy

Healthcare in the United States is a significant burden on the average American. The financial strain of medical expenses affects over 71.5% of bankruptcies and is the number one contributor to bankruptcy in America (Himmelstein 2019). 61% of all debt in America originates from medical costs, with the average American owing $9,374 (Austin, 2014; Schoen 2005). Insurance is likewise not affordable, as indicated by the fact that 11.1% of Americans are uninsured (“Trends in the U.S. Uninsured Population, 2010-2020”, 2021). Underinsurance (10% of household income going to health costs) has also surged to 21.3%, resulting in nearly a third of the US population lacking critical health services (Collins 2020).

Current data also clearly indicates that being uninsured or underinsured results in worse health outcomes for Americans. In the US, 54% of underinsured, and 59% of uninsured went without necessary medical services (Schoen 2005). Unsurprisingly, the uninsured and underinsured are between 25-40% more likely to die, with over 44,000 deaths per year, rivalling the impact of kidney disease (42,000) in the US (Franks 1993, Wilper 2009). Neonates are especially at risk, with lack of insurance increasing the risk of death by 260% (note, this is more than being born with congenial malformation) (Morriss 2013).

Additionally, healthcare outcomes in the US are poor compared to peer countries, despite very high cost of care in this country. In 2016, the US spent 17.8% of GDP on healthcare, with other high-income countries ranging from 9.6% to 12.4%. Yet the US has the lowest life expectancy of these countries, 78.8, compared to an average expectancy of 81.7 (Papanicolas 2018). US healthcare is ranked as low as 15th out of 25 major industrialized countries, partly due to inflated costs, waste, fraud, and the poorest aggregate utilization of physician visits and hospital days per capita (World Health Report, 2000; Anderson, 2003).

Universal Health Care (UHC) would directly address US concerns regarding cost of healthcare, lack of complete coverage, and poor health outcomes. The cost of implementation will likely temporarily spike total healthcare spending, but generally results in reduced cost down the road. Taiwan had a 14% increase in health expenditures the year they implemented UHC, however, the annual increases afterwards were 4.1%, less than half the size than they were before implementation of UHC, 8.3% (Hsiao 2016). Functionally, a monopsony for purchase of healthcare goods and technologies (such as pharmaceuticals) leads to reduction of aggregate costs (Hussey 2003). Coverage also improves significantly with the introduction of UHC. Several countries with sub 60% coverage surged to 99% within a year of implementation of UHC (Hsiao 2016, Panpiemras et al. (2011). Increased coverage results in lower mortality and better overall health in the population (Galvani et al. 2017). While there are clear benefits to implementing UHC in the US, there is a not strong support for UHC within the general population. Thus, increasing the likelihood of implementation by improving support for UHC is valuable. The goal of this project is to test whether presenting information differently on UHC can influence support towards UHC.

## Inadequacies with our current system

The purpose of health care is to improve the well-being of those treated. However, medical debt is still the most common cause of bankruptcy in the United States, even with the passage of the 2010 Affordable Care Act (Himmelstein, 2019.) Considering that medical debtors are 42% more likely to suffer from a lapse in medical coverage, the American health system often impairs the well-being of those treated instead (Himmelstein, 2005). Medical debt is accrued partly due to an extreme cost difference in medical care, with the US paying approximately twice the OECD median cost for medical procedures and pharmaceuticals (Anderson, 2003; Papanicolas, 2018; Tikkanen, 2020). This is compounded further by a general unwillingness to ration care and administrative complexity, pushing cost higher with low value outcomes (Reinhardt 2004). There are additional structural issues with the American system of competitive marketplace of multiple insurers. Preventative care and investment in medical infrastructure that generates long term value are under-invested in, as insurers share the benefits from the cost of implementation with their competitors (Anderson, 2003). Waste in the US health system is unnecessarily high due to the lack of centralized payment and distribution as well (Shrank 2019). Estimates of waste range from $760 billion to nearly $1 trillion, approximately 25% of total health spending. Over 40% of this waste is caused by a combination of administrative complexity and inflated pricing for healthcare. These problems lead to medical care being unaffordable in the United States for many individuals.

In addition to the inflated cost of care, health outcomes in the US are also notoriously poor. Life expectancy in the US has not improved since 2014, even as the per capita cost of healthcare has risen from $9,466 to $11,582 (National Health Expenditure Accounts Tables, 2014-2019; Murphy, 2014; Kochanek 2019). This is distressing when we consider that up to 50% the care provided is not evidence based (Manchikanti et al., 2010). Issues with quality of care are further exacerbated by our current system of fee-for-service distribution. Low quality and ineffective pharmaceuticals are distributed more quickly through the US health system compared to peer countries with UHC due to demands for rapid adoption of new treatments, without necessarily proving their long-term efficacy (Kyle, 2017). The US falls behind on almost every health outcome metric comparing to other high-income OECD peer countries (Tikkanen, 2020). Regarding mental health, the US has the highest suicide rate with 13.9 per 100,000 versus an average of 11.5. Examining recurrent health problems, the US also suffers from the highest chronic disease burden (28% of population versus an average of 17.5%) rate of obesity (40% versus an average of 21%) by far. Lastly, people in the US have the highest rates of hospitalizations and deaths from preventable causes (approximately 50% greater hospitalizations, and 70% greater deaths, than average). While the US spends the most in both percentage of GDP as well as absolute amount on healthcare by a significant margin, our health outcomes are uniformly worse than peer nations.

## Benefits of Universal Health Care

Before delving into the benefits of UHC, it is important to define exactly what “Universal Health Care” means. A resolution adopted by the UN General Assembly states that UHC is “access to key promotive, preventive, curative, and rehabilitative health interventions for all at an affordable cost” (Assembly, 1991). The most obvious benefit of UHC is that it leads to improvement in coverage. In both Thailand and Taiwan, within one year of implementation of UHC insurance coverage surged from less than 57% to over 97% (Panpiemras et al., 2011;Hsiao, 2016). Uninsured and underinsured individuals are significantly more likely to die, and have poorer health outcomes (Wilper, 2009;Finklestein, 2012; Morriss, 2013). In general, by improving coverage, population health improves.

Furthermore, having a UHC system can improve health outcomes through axis other than increased coverage. A UHC system allows for centralization of control and information for a country. During both the 2003 SARS epidemic and the 2009 H1N1 outbreak in Taiwan, automatic reporting and contact tracing integrating the travel and healthcare systems allowed for simple and effective contact tracing (Hsiao, 2016). Greater proportions of public health spending versus private health spending have also been shown to enhance overall health in 17 OECD peer countries (Kim, 2013). Each percentage increase in public expenditure reduces infant mortality by 0.077% and increases life expectancy by 0.026 years. UHC is a functional and effective way to drastically increase the proportion of public health spending.

In addition to improving coverage and quality of health, UHC is also effective at reducing waste and cost in the health system. A 30-year examination of OECD countries that implemented single payer system (controlling for health status, demographics, level of preventative medicine, and political factors) showed a difference in cost of .75% of GDP, estimated at 150$ billion per year in the US (Bichay, 2020). Half of the saved cost is due to reduced cost of medical goods and administrative spending (0.37% GDP) and most of the rest is due to improved health outcomes (0.2% GDP). Current waste in the US system due to administrative costs could be reduced by 33-53% with the adoption of UHC (Scheinker, 2021). Moreover, centralization due to UHC allows for savings from improved information aggregation and analysis. The Taiwanese National Healthcare Insurance Administration was able to use statistical modeling to identify outlier health providers, leading to an 8% reduction in expenditures within their first two years of operation by controlling fraud and abuse (Hsiao, 2016). Additionally, while we use 10% fewer drugs per capita than other OECD countries, our prices are 50% higher for equivalent drugs (Manchikanti, 2009). An extreme example can be found when looking at recent price spikes in the US for toxoplasmosis drugs (a 5,500% increase) and EpiPens (a 791% increase), which did not occurred in Europe or Canada. Countries implementing single-payer systems have lower average pharmaceutical costs, due to lower pharmaceutical prices and prioritization of effective generic alternatives to expensive brand-name drugs (Morgan, 2017). By creating a functional monopsony, UHC is effective at limiting aggregate costs across the board in both healthcare goods and technologies (Hussey, 2003).

## Opposition and Support to Universal Health Care

Opposition to UHC in the United States commonly originates due to an inability to understand UHC or the perception that UHC is unfair. In Americans that oppose UHC, approximately half were unable to understand the structure of the ACA or its component pieces (Barcellos 2013; Kaiser Family Foundation Health Tracking Poll 2011). Furthermore, misinformation regarding UHC is extremely common, as over 60% of Americans cited television as their primary source of information about the American Care Act (a step towards UHC). Television advertisements originating from Republican candidates in 2012 and 2014 painted an immensely negative picture of UHC, which was possible in part due to lack of information (Dalen 2015). Appraising a more narrow population, Huebner and colleages (2006) examined how US medical students feelings towards UHC change from their first to their fourth year. Medical student focus groups struggled to come to consensus on terms related to UHC such as “fee for service,” “managed care,” “single-payer,” “multi-payer,” and “universal health care”. This inability to come to consensus illustrates a lack of understanding UHC. Furthermore, the authors note that ‘complex policy terms’ were not able to be defined in the questionnaire, indicating a need to explain the concepts of UHC in a simpler fashion. Academic understanding and analysis of UHC has also been harmed due to a lack of a shared etymology (Hsiao 2016). Approximately 50% of those that oppose UHC believe that it would make healthcare simpler and easier to understand, conversely, we see that 89.4% who support UHC do so because they believe the health care system would be simpler and easier to understand (Holahan 2019).

Significant differences exist between those that support and oppose UHC based on perceived equity as well. Those that support UHC are 91% likely to do so because they believe equitable coverage for everyone is important, while only 45% of those that oppose believe the same (Holahan 2019). Furthermore, when Shen et al. (2016) examined the impact of racism on support for UHC, they instead found that perceived inequity was the cause. The authors hypothesized that Whites opposed government programs designed to eliminate racial inequity because it constituted unjust government assistance. This is particularly relevant as government aid has historically benefited disadvantaged groups that simultaneously suffer from low rates of insurance compared to Whites (11.7% for Whites, 20.8% for Blacks, 30.7% for Hispanics). While UHC is not designed to specifically benefit Blacks, individuals harboring racist beliefs may assume that is the case. Crucially, the saliency of whether the individual purported to benefit from UHC was a ‘free-rider’ (unfairly benefitting from UHC) was what predicted opposition to UHC. This was unrelated to race. This illustrates the importance of perceived equity on support for UHC. Determining how address both perceptions of equity and develop an accurate understanding of UHC to improve support is a challenge.

## Effect of a Health Benefits Package

A potential intervention that has not yet been examined in the literature is presenting UHC through the framework of a health benefits package (HBP). A HBP is defined by three factors (Glassman et al., 2016). First, HBPs are a comprehensive portfolio of services (e.g., dental, mental health, pharmaceuticals) as compared to programs that only cover a single service (e.g., GoodRx and pharmaceuticals). This allows assessment of cost effectiveness by allowing several types of services to be directly compared to one another. Second, HBPs are designed and priced using actuarially informed estimates of supply and demand. Third, HBPs constrain the services made available through the public health system, but by doing so, guarantee that at least certain services will be made available.

In the American system of health care, many experts agree that efficiency and quality of care are unlikely to be improved without an HBP like system, combining a well-defined framework with the legal specificity necessary for regulation (Chalkidou, Marquez, and Dhillon et al., 2014). Since HBPs create explicit entitlements for patients, they reduce confusion as to what is being offered. Furthermore, HBPs help ensure fairness and equity by preventing discretionary variation in access to care that would otherwise be largely determined by clinical professionals. In countries with UHC without an HBP linked to cost, such as Ghana, Uganda, and Peru, there are significant fiscal imbalances and implicit rationing with consequently lower quality healthcare outcomes. In comparison, countries that have UHC with an HBP tend to be well received. For example, 78% of Swiss citizens surveyed perceived their HBP based system as one that is fair for the ill, due to a combination of appropriate levels of coverage, equal protection to all Swiss citizens, and increased knowledge about the health system (Hurst 2018). As another example, when a HBP was used to examine different configurations of Medicare benefits, 83% of studied enrollees agreed that the consensus plan provided was fair (Danis 2004). Furthermore, 66% agreed strongly, and a further 30% agreed somewhat that the HBP was easy to understand. Most importantly, 86% of participants believed that the presented HBP was one they were satisfied with. Presenting otherwise complex trade-offs of health benefits in a simple, easy to understand fashion was extremely beneficial.

## Previous US Attempts towards UHC

There have been several attempts to implement UHC in the United States at the state level; however, none have been successful to date. In 2011, the local legislature in the state of Vermont enacted a bill in 2011 guaranteeing UHC for all Vermont residents (State of Vermont Health Care Financing Plan Beginning Calendar Year 2017 Analysis, 2013). This bill, known as “Green Mountain Care”, was perceived as both a tool to improve health outcomes in Vermont and a way to reduce medical costs and strengthen the economy as a whole. Three different independent organizations projected this to be the case, with a consensus that immediate healthcare costs for Vermont would be lowered by 8-12% and another 12-14% over the next 10 years (Hsiao, 2011; Green Mountain Care Financing Report, 2014; State of Vermont Health Care Financing Plan Beginning Calendar Year 2017 Analysis, 2013). Combined with the fact that cost increases were estimated to be only 9.4% for employers and 3.1% for individuals, total savings across the system were estimated to be $378 million over 5 years. Difficulties arose in implementation however, due to a combination of reduced federal revenue and increased scope of coverage to nonresidents working in Vermont (McDonough 2015). The plan was eventually abandoned in 2014, not due to lack of public support, but instead due to proportionally larger taxes on business and an inability to convey that these taxes would functionally replace current premium costs (Fox 2015).

Oregon is another state where UHC expansion has been debated and examined. The Oregon Medicaid lottery in 2008 was the first time in the US where a randomized controlled study on UHC was possible. Data from roughly 6,000 adults who were selected to apply for Medicaid, and 6,000 who were not, allowed for objective evaluation (Baicker, 2013). Researchers found no significant improvements in direct measurements of health, such as blood pressure, cholesterol, blood sugar, tobacco use, or obesity (James 2015). However, significant benefits arose in the form of greater management for continuing conditions, lower depression, and most significantly, an almost complete elimination of catastrophic out of pocket medical expenses, leading to lower medical debt. The primary concern from critics was the existence of such a severe disparity between the objective health outcomes and inherently noisy self-reported health data. Given these concerns, UHC was seen as politically infeasible, even though 62% of Oregon voters would “definitely” or “probably” support a UHC plan that would double or triple state taxes (Rosenberg 2020).

## Communicating the Health Benefit Plan

When communicating the essence of an HBP, it is important to ensure that what is being presented is clear and easy to understand, as well as emphasizing the necessary nature of tradeoffs or compromises in medical care. Developed by Goold et al. (2000), the Choosing Healthplans All Together exercise exhibits these traits perfectly. The central tenet of the CHAT exercise is for participants to construct their own HBP by allocating a limited set of resources to benefit types (e.g., dental, fertility treatments, long-term care) and choosing scope of coverage (e.g., generics instead of name-brand drugs, amount of copayments, etc.). The purpose of the exercise was initially to help explain how trade-offs in medicine are necessary, as well as to determine what the subjects prioritize in healthcare given limited resources. Conveniently, the final chosen plan is clear and explicit in what care is offered and at what level, neatly answering the issue of consumer confusion at the specifics.

The CHAT exercise has been a successful method of explain how HBPs are constructed, with over 95% of participants finding the task easy to do across several different implementations of the exercise (Danis, Biddle, and Goold, 2002; Danis,2002; Danis, 2004). CHAT has also been adapted twice to explore trade-offs in specific government funded health plans. First, Danis and colleagues (2004) used the CHAT framework to illustrate the financial constraints of government funded Medicare and to assist Medicare enrollees in developing a consensus on what services they want to prioritize. While 41% of participants felt that what was chosen was different than what they would have chosen for themselves, 86% were still satisfied with the plan they received. The second adaptation, by Hurst, Schindler, and Goold (2018), was used to examine how Swiss citizens would prioritize types of care in the already extant Swiss HBP based UHC system. The participants had no trouble using the exercise to improve their understanding of the Swiss HBP, were easily able to make trade-offs and set priorities, and found that they were able to reach a strong consensus. This was exceptionally valuable due to the diversity of opinions observed in the study.

It is important to note that the CHAT exercise is particularly valuable because it is a hands-on exercise as compared to a simple informational intervention. Work by Wegier et al. (2019) found that a simulated experience led to more accurate understanding of information as compared to simply being given explicitly described statistics. Furthermore, active instruction is particularly time efficient and engaging when learning complex, numeracy-focused material (Haidet, 2004). Active instruction is also particularly effective at improving subject-specific knowledge gains (Michel, 2009). These characteristics are an ideal match for the material presented in an HBP. Thus, it is reasonable to believe that active instruction will be more effective than a simple ‘fact sheet’ for an HBP that would otherwise be presented to the public.

## The Present Research

The goal of our two studies is to determine whether exposure to UHC through the framework of an HBP can improve support for UHC. Based on previous research, we know that UHC is likely to benefit the US if implemented, and that HBP directly addresses some of the primary reasons that are foundational to opposition of UHC. Regardless, no direct research has been done previously on the effects of HBP on UHC or the impact of passive versus active learning in this context.