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# Confusion In The Marketplaces: A Qualitative And Experimental Assessment Of The Decision-Support Tools Used By Northeastern State-Based Health Insurance Exchanges

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Confusion in the Marketplaces: A Qualitative and Experimental Assessment of the Decision-  
Support Tools used by Northeastern State-Based Health Insurance Exchanges

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## Abstract

The state-based exchanges created under the Affordable Care Act are not passive marketplaces that merely offer health insurance plans; they also endeavor to provide support to consumers in selecting those plans that best fit their healthcare needs. This paper examines the method by which six state-based exchanges (Connecticut, Maryland, Massachusetts, New York, Rhode Island, and Vermont) attempt to accomplish this goal using their online shopping infrastructure, also known as a decision-support tool. First, these decision-support tools are qualitatively compared in order to assess the design choices made by policymakers and relate those design choices to how they may impact consumer choice. Second, an online sample was asked to select an insurance plan based on a fictional health scenario within a randomly assigned decision-support tool in order to compare how often these tools facilitate the consumer into selecting a plan that rationally fits with their health insurance needs.

Although superficially the design of many of these decision-support tools is similar, there are important differences with regard to the default plans that are initially displayed, as well as the way in which plan information is presented to the consumer. Likely as a result of these design choices, individuals randomized to different exchanges picked widely different plans with regard to overall plan generosity (measured by metal level/actuarial value), and some states (Rhode Island and Vermont) appeared to facilitate the selection of rationally appropriate plans far more often than others. States were also generally more successful at matching individuals to plans when the default options displayed by the exchange were near in actuarial value to the rationally appropriate plan, even if individuals did not select one of the initial default options.

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## Introduction

“Once this reform is implemented, health insurance exchanges will be created, a competitive marketplace where uninsured people and small businesses will finally be able to purchase affordable, quality insurance. They will be able to be part of a big pool and get the same good deal that members of Congress get. That’s what’s going to happen under this reform. And when this exchange is up and running, millions of people will get tax breaks to help them afford coverage, which represents the largest middle-class tax cut for health care in history. That's what this reform is about.”

-President Barack Obama. Before the signing of the Patient Protection and Affordable Care Act - March 23<sup>rd</sup>, 2010

Before President Obama signed the Patient Protection and Affordable Care Act, he discussed several specific aspects of the bill related to the creation of state-based health insurance exchanges. President Obama described how individuals would be able to enroll in state-based health insurance exchanges, select affordable plans with potential tax subsidies, and then benefit from their new insurance. Although these are laudable goals, it is also important to consider that the insurance choices made by consumers within these exchanges may also matter as a public policy goal. The state-based exchanges appear to not only value that individuals purchase insurance but also seek to assist consumer choice, so that an individual or family purchases an insurance plan that is appropriate for their medical and financial needs.

This paper intends to compare some of the design choices that state-based exchanges make in regard to the facilitation of consumer choice in the online setting and match some of those design choices with experimental outcomes. Exchanges are first assessed in regard to how they offer the choice of a health insurance plan to consumers, and second, an online sample is randomized between several exchanges to see how these design choices influence the actual plans selected. Participants made this decision in regard to not their own health needs but that of one of two fictional scenarios, which represent two extremes in consumer needs (an individual



who anticipates little to no need of medical care in the coming year and one that expects frequent interactions with the healthcare system).

Although it would be ideal to examine each state-based exchange, this paper focuses on a limited subset: six exchanges based in the northeastern United States (Connecticut, Maryland, Massachusetts, New York, Rhode Island, and Vermont). The reason for focusing on a limited subset of the exchanges is to preserve power with a financially limited sample size in the experimental portion of the paper. These six exchanges were selected partially since the limited geographic variation might reduce any unexpected confounders, but most due to the unique features of these six exchanges: Massachusetts has the first state-based health insurance exchange, Connecticut's and Rhode Island's exchanges are highly regarded nationwide, New York's exchange covers a far larger and more diverse population than most, Maryland's exchange website initially failed and needed to be rebuilt entirely, and Vermont's exchange uses a more traditional and less technologically advanced method of facilitating insurance purchases than any of the others.

So far, the northeastern health insurance exchanges have been somewhat successful in regard to enrollment: During the 2015 open enrollment period Connecticut enrolled almost 110,000 individuals, over 120,000 in Maryland, over 140,000 in Massachusetts, almost 410,000 in New York, over 31,000 in Rhode Island, and over 31,000 in Vermont (Department of Health and Human Services 2015). Yet, what is almost entirely unknown is how successfully these 850,000 individuals selected their health insurance plans. For example, in Connecticut, an unhealthy individual who purchases the least expensive bronze plan within that state's exchange can face up to \$6,400 in annual out-of-pocket spending in addition to the costs of the premiums themselves, costs that would have been covered by selecting a more generous plan. Likewise, a

healthy individual that selects a too generous plan could similarly face high costs, beyond what would likely be optimal for that individual. A healthy person in Connecticut could purchase the single available platinum plan and then experience almost \$4,000 in annual premiums. Both of these scenarios, if they do occur frequently, might present cause for concern to policymakers.

### *The Importance of Consumer Choice*

Allowing for effective consumer choice is considered integral to the success of the ACA overall in a variety of ways. One primary objective of the health insurance exchanges is for consumers to select optimally so that insurers compete on price and quality, driving the market to greater efficiency (Nadash and Day 2014). Allowing the market to function toward this goal is entirely predicated on consumers being able to rationally select plans, something which has not always occurred with similar government-hosted private markets as will be described later.

A second reason for the importance of exchange-based decision-support is that although plans within exchanges will be standardized by the actual values (60% of total actuarial value for bronze, 70% for silver, etc.), beyond these guidelines, insurers will have great amounts of freedom to determine plan details (Nadash and Day 2014). Consumers may need to go beyond the information provided by the medal level and premiums to select appropriate plans, which requires comparing complex information that the exchange will need to facilitate.

Consumers may also have little experience in selecting such plans, which might provide an additional reason for the state to facilitate this process. Only 5% of the population previously purchased insurance through non-group markets, meaning that this experience of selecting one insurance plan out of many may be entirely new to some (Gaynor and Town 2012). Finally, the centrality of these decision-support tools to the health insurance decision must also be fully appreciated. 90% of Massachusetts Health Connector plans are purchased online as opposed to

over the phone, indicating that many individuals may only interact with the decision-support tool before making their decision (Day and Nadash 2012).

### *The Experience in Massachusetts*

The policy selections made by those within the Massachusetts Health Connector after Massachusetts earlier passed its own health reform might provide some insight into the choices that other policymakers needed to make in the ACA state-based exchanges. The Massachusetts Health Connector tended toward standardization and some limits on plan flexibility based on consumer feedback (Day and Nadash 2012). Before building the exchange, focus groups suggested that individuals desired four to six carriers with three options of benefit level for each carrier. Health Connector officials eventually settling on four tiers (bronze, silver, gold, and young adult) and carriers were asked to then only bid to place one product in each of three tiers with two silver products. Top leadership at the Connector said that limited plan options were a goal for the exchange stating, “we want the market to select and drive us toward fewer, more popular options over time.” The Connector ended up accepting seven of ten carriers. For the next year, leadership attempted to standardize the plans to allow for easier comparisons of plans based primarily on premiums. However, feedback from consumers suggested that the offerings were “confusing” and “overwhelming.” In addition to concerns that the plans might contain hidden information that might lead the purchaser into a mistake, the top customer concern was still the price of the monthly premium, followed by the out-of-pocket cap and then annual deductible.

### *Background on Consumer Knowledge*

A prime consideration for policymakers in designing a health insurance exchange is how knowledgeable potential enrollees are about health insurance. Data from a taken survey in

August and September of 2013 (Barcellos, Wuppermann et al. 2014) show how poorly informed Americans are about the Affordable Care Act and health insurance, with poorer and uninsured individuals being especially uninformed. Only 78% of Americans have heard about healthcare reform (with 64% uninsured and 51% of those below 100% of FPL reporting the same). 51% of Americans know about the exchanges (36% of uninsured, 42% of those between 100% and 250% of FPL).

Individuals also seemed to lack the skills to understand differences in health insurance plans offered on the exchanges. Only 42% of the uninsured could describe a deductible while 58% of the general population could (Barcellos, Wuppermann et al. 2014). Likewise, only 42% of the uninsured knew about the off between deductible and premium, while 51% of the 100% to 250% of FPL population did. Comprehension about specific health plan models was also low with only 38% of those sampled understanding that HMOs restrict provider access more than PPOs and only 19% of the uninsured understanding that difference. About 15% of individuals were also unable to accurately understand how much they would need to pay if they experienced a \$15 copay for an office visit.

In sum, this survey showed that individuals with incomes below 400% of FPL, high school level education or less, non-white, and younger than 44 were more likely to believe that they knew less about health insurance and then actually knew less about health insurance than comparison groups (Barcellos, Wuppermann et al. 2014). Those in fair/poor health and women rated their knowledge of health insurance as lower, when in fact there was not any significant difference between them and their comparison groups. For knowledge about the ACA, those of incomes less than 250% of FPL, education less than a bachelor's degree, non-white, female, and younger than 44 objectively knew less, while self-rated knowledge was lower for those with

bachelor's degrees and lower, non-white, fair/poor health, female, and younger than 44. Finally, individuals of all incomes and insurance status believed that their experience in healthcare would be worse across all income and insurance statuses, even with regard to out-of-pocket costs. This generalized lack of information, especially in vulnerable populations suggests that state policymakers may need to do much to ensure consumers make appropriate insurance choices.

### *How Exchanges Facilitate Choice: Decision-Support Tools*

In 2015's open enrollment period, 1% of individuals selected catastrophic plans, 22% selected bronze, 67% silver, 7% gold, and 3% platinum plans, but the method by which states facilitated these choices appears to be a source of both great variation in policy and value to states (Department of Health and Human Services 2015). To help individuals select appropriate insurance plans, state-based exchanges have invested in what are called decision-support tools. The National Committee for Quality Assurance defines a decision-support tool as a tool that "helps consumers make informed decisions by providing and managing information, clarifying preferences and presenting the tradeoffs involved in various choices" (NCQA 2012). Such tools in the health insurance context can take many forms, from a printed page that compares plan features such as deductibles and premiums to personalized suggestions based on past healthcare spending to interactive computer-based comparisons which allow the user to sort and filter plans with a wide variety of factors. To differentiate these types of decision-support tools the NCQA has three general categories of decision-support tool:

- "Basic – Report card displaying comparative information on the benefits of different plans offered."
- "Advanced – Personal worksheet that allows consumers to identify and compare specific features of available plan options."

- “Sophisticated – Computer-based interactive application on internet portal.”

Five of the northeast exchanges currently use sophisticated decision-support tools where users are able to interact with the list of plans by sorting for plan features or examining plans in greater detail. Such decision-support tools are some of the most important technical assets developed by the exchanges (Access Health CT 2014). One exchange, Vermont, uses a fairly basic decision-support tool: a one page PDF. However, the type of tool is not the only choice that state policymakers can make that could impact insurance selection. The number of plans, the default plan selection, how premiums and out-of-pocket costs are framed are all policy choices which may impact plan choice for the thousands of individuals within the exchanges.

## Literature Review

### *A Psychological Framework for Insurance Selection*

It is important for policymakers to consider the psychology of how individuals select insurance and how they might make errors. Hibbard and Peters discuss several potential ways of improving decision-making in the healthcare setting and specifically decisions about health insurance (Hibbard and Peters 2002). They discuss how health insurance decisions make strong cognitive demands on consumers due to the use of “technical terms and complex ideas,” “multiple options for several variables,” and the need to “weigh the various factors according to individual value, preferences, and needs.” Hibbard and Peters describe several strategies for improving decision-making, which include decision-support tools, narratives, tailoring plan information and framing. The authors argue that strategies such as a decision-support tool lowers the cognitive effort required to make decisions by providing analytical support, while other strategies such as narratives help consumers connect with their experiences. Tailoring information can provide both experiential and analytical support.

An individual’s selection of an insurance plan can be affected by a variety of psychological phenomenon which may lead them to make a mistake, which may be important for policymakers to consider when designing the user-interface of a health insurance marketplace (McFadden 2006). Memory, judgment, and decision-making are all important aspects of the cognitive process of selecting an insurance plan. The relevant ways in which memory can be distorted include:

- Availability- memory recall is biased toward the most available information
- Primacy/recently- recent experiences are more available than distant ones

- Reconstructed memory- memories can be partially created through cues in ways which are not entirely accurate

An individual selecting a health insurance plan might need to remember their past experience with medical care and health insurance and inaccuracies in retrieving these memories could therefore bias toward selecting one plan over another. For example, a consumer might misremember an expensive out-of-network procedure with high cost sharing as not being out of network, resulting in the consumer potentially considering that carrier to be less generous than that insurer actually is.

Likewise, judgment and the formation of beliefs and perceptions are also important to selecting health insurance (McFadden 2006).

- Anchoring- judgments are influenced by other provided quantitative information
- Framing- history and context for the decision influence the outcome of the decision
- Endowment/reference point- status quo that provides a stable reference point that may be appealing to consumers
- Prominence- format or ordering of information influences the weight that is given to different aspects
- Prospect- asymmetry in how benefits and costs are evaluated

This information is especially important for decision support tools, as the tool has the power to either help or harm by using these cognitive biases. Offering a Silver Plan as the initial choice (as Rhode Island chose to do) might lead to anchoring or act as a reference point, which could bias individuals away from less expensive plans. Prominence is also especially important as the tools allow for various methods of sorting the relevant plans.



Furthermore, the decision processes that consumers use can also be affected and biased by a decision-support tool (McFadden 2006).

- Awareness- subjective limitation of choice set
- Construal- misconstrued preferences
- Disjunction- failure to reason through the consequences of a choice
- Engagement- limited attention to the task
- Innumeracy- limited ability to cognitively reason through all options
- Suspicion- mistrust of others in new situations

An individual selecting from over a hundred healthcare plans might face great levels of innumeracy, while another individual who is unaware of how deductibles work might select to use the more available information about the premium. Although an exact understanding of how these factors impact insurance choice is beyond the scope of the paper, these psychological phenomena are important to consider in design choices that policymakers make for the exchanges.

### *Selecting Insurance in a Laboratory Setting*

One important aspect of insurance offerings involves how the number of plans offered impact the decision choice of the individual (Schram and Sonnemas 2011). One way to test this is in a laboratory setting. Schram and Sonnemas hypothesize that more options may:

1. Improve insurance choice as individuals are able to have more alternatives, one of which may fit their needs better
2. Worsen insurance choice as the alternatives allow selections that are more distant from the optimal

3. Worsen insurance choice as more plan options will result in more time being necessary to select a plan, raising the time cost of deciding upon a plan

In a setting where individuals made choices of mock insurance plans and then encounter simulated health problems, the researchers found that presentation of a greater number of insurance options led to less appropriate (poorer) choices by subjects. Individuals generally made poor choices initially and then changed their desired insurance policy quite frequently, despite the costs associated with switching plans. These plan switching costs led to suboptimal outcomes for many participants. The researchers speculated that participants were using a trial and error approach to determine the best options, when careful consideration and selection of a plan would have been better for most. The researchers also speculated that increasing the costs of switching plans might be a good choice for an insurance marketplace since it would make the costs of a poor insurance selection higher, possibly forcing individuals to deliberate more on their choices. Slow changes in “health status” in this simulated setting also resulted in non-optimal outcomes as individuals failed to alter their plans appropriately when their risk of a health shock only changed by minimal amounts at a time. Individuals were also more likely to insure themselves appropriately for low-cost, high-probability events than for low-risk, high-cost events.

### *Empirical Data*

#### *Presenting Price and Subsidy Information*

Under the German health insurance system, individuals generally have access to an exchange containing over 150 insurance companies offering plans that are highly regulated (Schmitz and Ziebarth 2011). Due to the high level of regulation, the plans are somewhat standardized and compete mostly on price. In 2009, concerns over individuals making non-

optimal insurance choices promoted the German legislature to shift the ways in which prices were represented within the marketplace, shifting from listing prices as a percentage of the user's income to the absolute Euro value. Previous to reform, individuals were less price-sensitive with an annual 120 Euro price increase for a plan leading to only a 16% likelihood increase for plan shifting. After the change in the way prices were displayed, individuals became twice as likely to switch for the same 120 Euro increase in premium costs.

Another way that that HIEs display information relates to the advance premium tax credit. The way in which this credit is displayed may alter consumer behavior as has been shown within the Medicare Advantage market (Stockley, McGuire et al. 2014). Medicare Advantage includes a benchmark payment rate, which acts as a standard for Medicare Advantage plan premiums. Medicare Advantage plans that offer premiums that are below the benchmark premium are not displayed within the initial plan comparison screen of the Medicare Plan Finder. The differences in premiums are displayed and when a premium is below that of the benchmark, the finder displays that the low cost plan is \$0 more than the benchmark, when in fact it is less than the benchmark. To access this information that the premium is indeed lower, individuals must click the plan and locate the monthly premiums section within the detailed information screen about that specific plan. Furthermore, this screen does not list the original Part B premium, so it may be unclear to consumers that such a plan is less expensive than the benchmark rate. Additionally, since individuals have their premiums automatically deducted from their Social Security payments, consumers may be unclear as to what their current monthly premium is. Demand for plans that have below benchmark premiums is less than one would normally expect as the demand curve kinks at the benchmark price for Medicare Advantage plans. Carriers have reacted by increasing the generosity of many of their lower priced options

in order to price them closer to the benchmark. Increasing the benchmark also had little impact upon premiums except that insurers did continue to make their plans more generous in order to reach the benchmark level. The implication for state-based exchanges is that if decision-support tools distort consumer preferences in any way, insurers might react to exploit this distortion.

### *Irrationality and Poor Choice*

Although a decision support tool might help to eliminate some choices for consumers, there is no guarantee individuals will then select adequate plans. An examination of the selection of Medicare Part B plans by seniors and their actual medical expenses shows that seniors may be making mistakes in selecting their plans by using a support tool to screen for certain plan choices, but then are making an irrational decision (Li and Trivedi 2012). The researchers found that seniors screen plans by premium, prescription drug coverage, and vision coverage but after screening, but then make their decision about their specific plan for unclear reasons.

Irrational choice was also shown with plans under the Massachusetts Health Connector that had greatly varying degrees of generosity with regard to mental health and addiction treatment services (McGuire and Sinaiko 2010). Those individuals below 100% of FPL had a maximum copayment of \$0 with no cost sharing for outpatient or inpatient mental health coverage. Yet, when incomes rise to above 200% of FPL, the plans are not as generous with \$250 copays per inpatient stay and \$1500 maximum copayment. 1/3<sup>rd</sup> of those of those with mental healthcare needs who switched from a no out-of-pocket cost plan to a Connector plan cut back on mental healthcare, potentially because they did not understand that the Connector plans might be less generous than Medicaid or other options. Under the exchanges, insurers may be incentivized to incorporate stringent cost sharing without advertising this to consumers, in order to reduce costs. Those with certain mental health disorders may also experience more difficulty

in selecting plans and accessing this information about mental health benefits, facing a barrier beyond what other individuals who require specialty care might face.

### *Poor Choices in Employer Based Coverage*

The insurance decisions made in privately hosted marketplaces seem to be similarly flawed to those made in public marketplaces. Workers in the University of Michigan were offered a choice of several health plans, two of which were provided by a single insurer (Sinaiko and Hirth 2011). Of these two plans, the HMO offering was dominated by the PPO plan as the PPO offered the same network with less generous cost sharing at the same price. 35% of all workers were enrolled in this dominated plan in 2002 as well as 2003. The individuals who selected the dominated plan were more likely to be male, younger (below 50), and earn less.

Another study that examines health insurance decisions by individuals with employer-sponsored coverage also showed difficulties for individuals selecting optimal plans (Handel and Kolstad 2013). Employees selected between two plans a PPO and a high-deductible health plan (HDHP). Employees were generally poorly informed about the plans with 20% incorrectly believing that the PPO plan granted access to a wider provider network than the HDHP, while 30% were unsure. The costs of these mistakes were quite high as \$2,267 on average was lost by individuals who falsely believed the PPO provided greater medical access over the HDHP. Individuals also may have improperly valued their time, as the median consumer would have saved \$119 for every hour spent deciding between the two plans. Individuals in this study were not exactly representative of the exchange population with the majority being male, young, and fairly wealthy.

Individuals in this study population also displayed wide ignorance of the specific details of their health plans. Only 27% could correctly identify their deductible, 19% their coinsurance,

18% their out-of-pocket maximum, 37% their own health spending (Handel and Kolstad 2013). Individuals were also not entirely confident in their decision with 36% very confident, 44% somewhat confident, and 20% not confident. There was also a difference in information level with those selecting a HDHP being generally more informed than those selecting the PPO.

### *The Problem of Flawed Decision-Aids*

Data from reform in the privatized Mexican Social Security system might provide evidence to inform the discussion here over health insurance since consumers are also purchasing a complex, privately offered product (Duarte and Hastings 2012). Initially, consumers were generally not price sensitive to investment fees and frequently selected plans that were essentially identical in their benefits but had higher fees. Plans with incredibly high investment fees persisted within the market, even though there were objectively better options than these high-fee plans. To assist consumers in selecting plans with lower fees, the federal government created an official fee index, which combined several types of fees into one index that could be more easily understood by consumers. This was an attempt to “nudge” consumers in order to select more optimal plans.

Yet, the index was somewhat flawed in that it did not include all of the potential fees, which meant that the index did not always correspond to the true cost of the fees (Duarte and Hastings 2012). Consumers reacted to this change by becoming incredibly price sensitive to the fee index. However, consumers commonly selected higher cost plans that had better index values instead of lower cost plans, likely assuming that the index was an adequate measure of costs. Most interestingly, firms reacted to this shift as by attempting to game the system by adjusting their fees to improve index scores, while also increasing overall fees charged to

consumers. Furthermore, these fees were not evenly distributed with those who were poorer generally making worse choices and paying more in fees than those who were wealthy.

### *Adverse Selection*

Health insurance faces a fundamental tension: risk is only able to be spread across individuals if they are unable to adversely select with their insurance purchase (Zeckhauser 1970). If consumers segment themselves into purchasing insurance determined by individual risk, this reduces the value of insurance, creating welfare loss for all. If an exchange had the ability to perfectly facilitate individual choice, it may desire to not do so in order to prevent this from occurring.

A study by Handel examined a firm to see to what extent improving individual choice would lead to increased adverse selection (Handel 2013). The firm offered one PPO plan and four HMO plans, and this intervention forced employees to select a new plan instead of defaulting to an older plan. The average employee reduced their total spending on healthcare by \$2,032, yet these benefits were short-lived as increased adverse selection resulted in changes in premiums, which ended up reducing total welfare for employees by 7.7%, meaning that workers as a whole were actually worse off when their ability to choose appropriate health insurance plans was improved.

A second study by Handel and now Kolstad modeled the barriers to choice that employees faced within an employer sponsored health insurance plan where employees selected either a PPO or an HDPH (Handel and Kolstad 2013). The model that the researchers created likewise showed that if friction costs were removed (such as the cost of time spent to reach a decision) employees would again be exposed to greater risk, roughly doubling welfare loss due to adverse selection.

### *Medicare Part D*

Medicare Part D, officially known as the Medicare Prescription Drug Benefit, was created as a portion of the Medicare Mobilization Act of 2003. Under Part D, seniors select one of a variety of insurance options, provided by private business. Abaluck and Gruber examined seniors' selections of Part D plans and compared those results with their actual pharmaceutical expenditures, both looking retrospectively and prospectively (Abaluck and Gruber 2011). Seniors generally made poor choices of their Part D plans; only 12.2% chose an optimal plan that would have minimized their total spending. On average, seniors could have saved 30.9% of their total pharmaceutical spending if they had selected the lowest-cost plan. Even if seniors are particularly risk-adverse and would desire to purchase extra insurance to reduce their overall risk, 70% of seniors could have selected a plan with lower total costs while not increasing their risk of high out-of-pocket costs. The average enrollee could have saved 23.3% of their total expenditures by selecting a different plan with equivalent risk. Abaluck and Gruber did find that seniors did make good decisions about selecting plans with lower premiums, lower out-of-pocket costs, and better quality. Yet, they found that seniors over-weighted premiums when compared to total out-of-pocket costs, overvalue plan characteristics more than their own financial risk, as well as again often forgoing risk-reducing plans. Seniors were quite sensitive to price increases where increases in plan premiums of \$100 resulted in a 50% decrease in plan selection, leading to a calculated demand elasticity of -1.17.

The choice that seniors made in this study does in some way parallel the choices that a consumer in a health insurance exchange might make. The number of plans available ranged from 27 to 70 by county with an average of 48. However, the Medicare Part D plans do differ in scope somewhat from plans offered under an HIM. The average premium paid for Medicare Part



D after enrollment was \$287, total drug spending was \$1,711, and out-of-pocket spending was \$666. The study population was also quite different than what we would expect for exchange enrollment, as the average age was 75 years, three-fifths were female, and they made on average of 34 claims per year.

A recent study by Ketcham et al. found that seniors continue to select non-optimal plans, although the gap between the optimal plan and the selected plan has declined (Ketcham, Lucarelli et al. 2012). Using data from CMS and CVS Caremark, the investigators showed that the difference between the chosen and the optimal plan decreased by an average of \$300 between 2006 -2007 and 2012. Overspending was still widespread, with 81% of the sample not selecting an optimal plan. Those individuals who had non-optimal plans were less likely to have switched plans recently, suggesting that there might be some inertia which leads to continued poor plan choice. Older individuals as well as those with Alzheimer's were actually more likely to improve their plan choice, which the researchers hypothesize is the result of institutional and family support that increases at greater age or with an Alzheimer's diagnosis.

Another 2012 study with a similar methodology showed that only 5.2% selected an optimal plan with average overspending of \$368 and with 22% of beneficiaries missing out on at least \$500 in annual savings (Zhou and Zhang 2012). This study found that those aged more than 84 overspent more, as did whites. Alzheimer's was again associated with lower wasted spending. The majority of this over spending again resulted from overspending on premiums and not high out-of-pocket costs, slightly conflicting with the results of Abaluck and Gruber. However, these results do show some changes in CMS policy with the number of available plans reduced to a range of only twenty-five to thirty-six across the counties.

In the Medicare Part D program there is also concern over comparison friction, or the gap between information that the consumer uses and the information available (Kling, Mullainathan et al. 2011). One experiment compared the standard online/offline selection process with that of an additional intervention of a mailing with personalized cost-information for Part D plans. This intervention did not create new information, as the information was accessible online, but the researchers provided this information directly, instead of having seniors access it themselves.

The impact of this intervention was extensive with 28% of those in the intervention group switching plans compared to only 17% in the comparison group (Kling, Mullainathan et al. 2011). The average decline in costs for the intervention group was \$100. Those individuals who were not satisfied with their plans were more likely to save money, as well as those who were less educated. Among those who did switch plans as a result of the intervention, savings averaged \$1030. Even more significantly, the seniors themselves generally underestimated their potential savings by switching plans. 70% underestimated the amount that they would save, with an average underestimate being \$400 less than the true value that they would save. This suggests that seniors may decide to not expend as much effort on selecting plans as would be optimal, since they underestimate the benefit of such an effort. The individuals within this population were similar to that of the Abaluck and Gruber study: mostly white, average age of 75, two-thirds women, two-thirds married, and half college graduates.

## Website Qualitative Assessment

Within the northeast health insurance exchanges, there exists quite a range of design choices the relate to the exchanges' decision-support tools such as the number and types of plans that are available, the range of plan costs, the order in which plans are first displayed, the ability to sort or filter plan choice, as well as the aesthetics of the information provided about each plan. Some of the initial choices that a policymaker might decide involve the plans themselves that are offered within the marketplace. Much as Massachusetts made important decisions with regard to the plans that they offered with the exchange in the time before the ACA was passed, the other northeast states had to make similar choices as to what plans would be offered in their exchanges. An overview of the plan features in the five states is shown in Table A, below:

Table A, Overview of Plan Features<sup>1</sup>

	CT	MA	MD	NY	RI	VT
Carriers	4	9	7	31	3	2
Available Plans	41	108	53	145	20	18
Minimum Premium	\$131	\$133	\$113	\$143	\$157	\$360
Maximum Premium	\$331	\$656	\$348	\$741	\$300	\$647
Range	\$200	\$523	\$235	\$599	\$143	\$287

These decisions show some high-level design choices made by state policymakers in the number of plans they allow insurers to offer as well as the number of insurers they allow into the exchange. Connecticut, Maryland, Rhode Island, and Vermont offer relatively few plans with limited numbers of carriers, while Massachusetts and especially New York offer greater numbers of choices. Another consideration is the premiums within the exchange, which may act as a

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<sup>1</sup> The numbers displayed below are for that of a single, 25-year-old individual, living in the

frame. Again, Massachusetts and New York appear to allow greater range in plan costs with some of the most expensive plans on any of the northeast exchanges. Vermont appears to also offer higher end plans as well, but the lower end plans are also expensive in Vermont, likely due to the lack of age rating for those enrolling in the Vermont exchange (Stein 2013).

### *Sorting Plans*

Another high-level design feature involves the ability of users to sort plans based on certain types of information. There is much state variation, as illustrated in Table B, below. Allowing users to sort by this information suggest both that such information is important and that individuals should use it to a make their choice.

Table B, Sort/Filter Functions

	CT	MA	MD	NY	RI	VT
Premium	X	X	X			
Medal Level	X		X	X	X	
Annual Deductible	X	X	X		X	
Carrier	X		X	X		
Quality	X		X	X		
Max OOP Cost		X				
Out of Newark Coverage				X		

### *Ordering Plans*

As shown in Table C, below, there is much variation in how individuals are able to filter with the Vermont static decision-support tool offering no options. Similarly, the exchanges offer different ways to order the plans that then are displayed; almost all allowing ordering by premium while Connecticut and Maryland offer a wider variety of options.

Table C, Order Functions

	CT	MA	MD	NY	RI	VT
Premium	X	X	X	X	X <sup>2</sup>	
Medal Level	X		X			
Annual Deductible	X		X			
Carrier	X		X			
Quality	X		X			

*Details of Decision-Support Tools by State*

*Access Health CT*

The Connecticut decision-support tool offers plans ordered by initially premium with the ability to also order by four other plan features: metal level, annual deductible, carrier and quality rating. Boxes on the left allow users to filter plans by values within those five previous plan features. Connecticut also has a plan comparison tool that allows users to compare up to three options with details not listed on the initial page, a feature that is common between all the interactive decision-support tools.

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<sup>2</sup> Although Rhode Island does sort by premiums it does so in a more complicated way than from low to high cost as the other exchanges do, as will be described later.

Figure A, Connecticut Decision-Support Tool

41 of 41 plans
Clear All

No Filters Selected

Compare Plans

Compare These Plans

**Estimated Monthly Premium**

Under \$49

\$50 - \$99

\$100 - \$149

\$150 - \$199

Over \$200

**Metal Level**

Catastrophic

Bronze

Silver

Gold

Platinum

**Annual Deductible**

Under \$1299

\$1300 - \$2599

**Aetna**
QUALITY RATING: ★★★★★
Details

**Catastrophic HMO Pathway X Enhanced**
METAL LEVEL: Catastrophic

ESTIMATED MONTHLY PREMIUM	ANNUAL OUT-OF-POCKET MAX	EMERGENCY ROOM	PRIMARY CARE CO-PAY	ANNUAL DEDUCTIBLE
\$131.13	\$6600	\$0	\$40	\$6600.00

[Click Here For Detailed Plan Documents \(PDF\)](#)

Check if your doctor is in-network
Add to Compare
APPLY

**ConnectCare**
QUALITY RATING: Not yet rated
Details

**Catastrophic POS**
METAL LEVEL: Catastrophic

ESTIMATED MONTHLY PREMIUM	ANNUAL OUT-OF-POCKET MAX	EMERGENCY ROOM	PRIMARY CARE CO-PAY	ANNUAL DEDUCTIBLE
\$140.80	\$6600	\$0	\$30	\$6600.00

[Click Here For Detailed Plan Documents \(PDF\)](#)

Check if your doctor is in-network
Add to Compare
APPLY

**ConnectCare**
QUALITY RATING: Not yet rated
Details

**Bronze Select POS HSA**
METAL LEVEL: Bronze



ESTIMATED MONTHLY PREMIUM	ANNUAL OUT-OF-POCKET MAX	EMERGENCY ROOM	PRIMARY CARE CO-PAY	ANNUAL DEDUCTIBLE
\$153.70	\$6400	\$0	\$0	\$6000.00

[Click Here For Detailed Plan Documents \(PDF\)](#)

How Can I Help?

Switch Sides

Figure B, Connecticut Plan Comparison Tool

	Catastrophic HMO Pathway X Enhanced	Catastrophic POS
	 <a href="#">Remove from comparison</a> <input type="button" value="Apply"/>	 <a href="#">Remove from comparison</a> <input type="button" value="Apply"/>
<b>Plan Overview</b>		
<input checked="" type="checkbox"/> Estimated Monthly Premium	\$131.13	\$140.80
<input checked="" type="checkbox"/> Health Care Provider	<a href="#">Search Providers</a>	<a href="#">Search Providers</a>
<input checked="" type="checkbox"/> Plan Type	HMO	POS
<input checked="" type="checkbox"/> Plan Level	<span style="color: red;">●</span> Catastrophic <input checked="" type="checkbox"/>	<span style="color: red;">●</span> Catastrophic <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Quality Rating (NCQA)	★ ★ ★ ★	Not yet rated - new carrier
<b>Cost Sharing Overview: Member Pays</b>		
<input checked="" type="checkbox"/> Deductible	<u>Individual</u> In-Network: \$6600  <u>Family</u> In-Network: \$13200	<u>Individual</u> In-Network: \$6600 Out-of-Network: \$6750  <u>Family</u> In-Network: \$13200 Out-of-Network: \$13500
<input checked="" type="checkbox"/> Out-Of-Pocket Maximum	<u>Individual</u> In-Network: \$6600  <u>Family</u> In-Network: \$13200	<u>Individual</u> In-Network: \$6600 Out-of-Network: \$12500  <u>Family</u> In-Network: \$13200
<input type="button" value="← Back to Plan Results"/>		

Connecticut's Access Health CT website has a unique feature incorporated in its website and the decision-support tool itself: an animated avatar that guides the user by either indicating links that can allow the user to achieve specific tasks or by providing relevant information. The user clicks the avatar which then responds with audio, animation, and highlighting of relevant parts of the website. Most significantly, within the decision-support tool, users can access definitions of relevant terms, information about the health system, etc. that may further aid the user in making their choice of health plan.

Figure C, Connecticut Avatar Guide



### *Maryland Health Connection*

The Maryland decision-support tool bears an almost identical resemblance to that of Access Health CT, as it is in fact the same decision-support tool. After the failure of the Maryland Health Connection website, Connecticut officials released their software to Maryland (Davis and Flaherty 2014) (Johnson 2014). Although there are some minor, mostly cosmetic differences (the lack of the animated avatar being one), the only major difference in the decision-support tools involves the plans available to users.

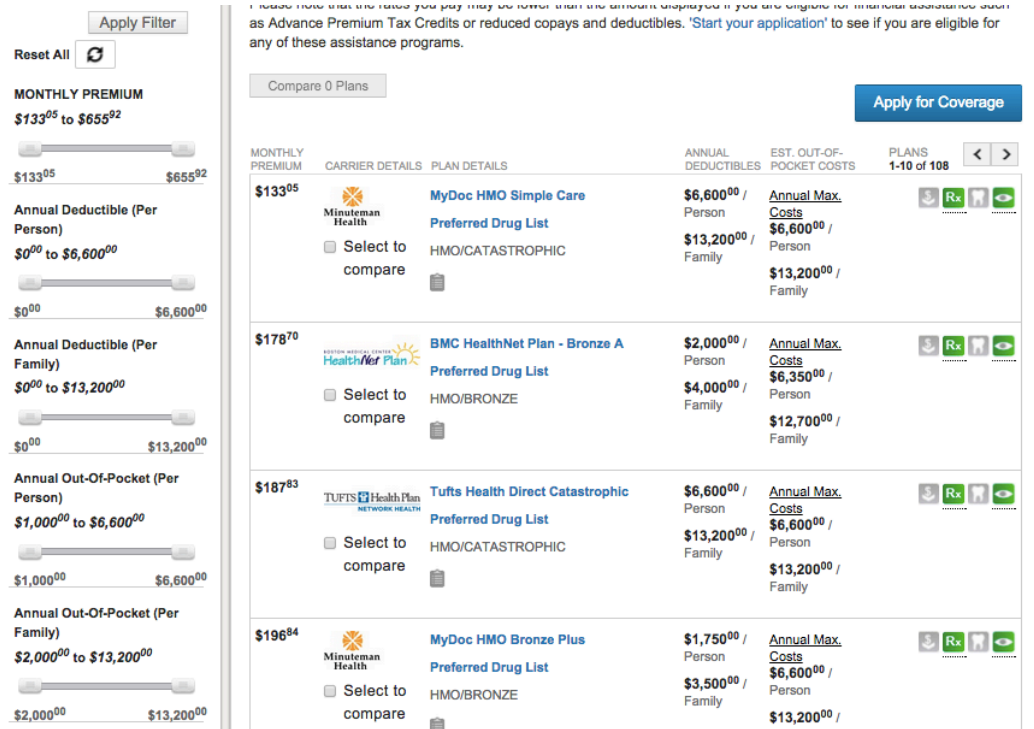
### *Massachusetts Health Connector*

Although Massachusetts decision-support tool bears some similarities to the Connecticut and Maryland decision support tools, there are important differences. The decision-support tool similarly ranks by premium but with a far greater ability to select certain plan features in detail.



Instead of only sorting by plan information, individuals can select certain monetary ranges for plan features such as deductible and annual out-of-pocket expenses.

Figure D, Massachusetts Health Connector



However, unlike the Connecticut tool, the Massachusetts tool does not bury this complexity and presents it immediately to the consumer. As such the Massachusetts exchange provides probably the most information to users at one time, excluding perhaps the Vermont exchange.

### *New York State of Health*

New York offers a decision-support tool in a format that is similar to that of Connecticut, Maryland, and Massachusetts, but it differs greatly visually contains a larger number of options than these other states. New York provides a similar number of options for filtering than the other exchanges but in a visual style that takes up a large amount of space at the top of the page.

Figure E, New York Filter Options

The screenshot shows the 'Search for Plans' interface on the New York State Health Plan Marketplace website. The page is titled 'Search for Plans' and includes a sub-header: 'This search tool lets you shop for health plans based on features important to you. Select from the features below. Only county is required.'

The 'Filter Options' section is organized into a grid of dropdown menus and checkboxes:

County (Required) Albany	Plan Year 2015	Persons Covered INDIVIDUAL	Quality Rating --All--
Coverage Type MEDICAL	Metal Level --All--	Insurance Company --All--	Hisos Plan Id --All--

Below the grid, there are additional options:

- Estimated Financial Help:** A button labeled 'Estimate Financial Help' and an empty input field.
- Checkboxes:**
  - Dependent Age 29
  - Out Of Network
- Buttons:** 'Reset All' and 'Search'.

At the bottom of the filter section, it says 'Search plans for 2015'. Below this, there are buttons for 'Compare Plans' and 'Reset Compare Plans'. The page number 'Page 4 of 15' is visible in the bottom right corner.

The plans themselves are listed below in a similar style with wide spacing and one piece of information in each column. One interesting aspect of the New York plans is that may be slightly harder to directly compare plans of different medal levels due to the vast number of available plans. Individuals would need to first select a plan of one medal level and then navigate by resorting plans using the top options (otherwise users would need to select next page several times, since only ten plans are displayed at a time).

Figure F, New York Plans

Search plans for **2015**

Compare Plans  Page 4 of 15

<input type="checkbox"/>	Insurance Company	Plan Name	Metal Level	Coverage Type	County	Persons Covered	Price Per Month	Details
<input type="checkbox"/>	 ★★★★☆	WellCare Bronze ST INN Pediatric Dental Dep29	Bronze	Medical Plus Child Dental	Albany	Individual	\$396.81	<input type="button" value="View Details"/>
<input type="checkbox"/>	 ★★★★★	HDHMO Non-Qualified 40 Bronze ST INN Dep29	Bronze	Medical	Albany	Individual	\$397.46	<input type="button" value="View Details"/>
<input type="checkbox"/>	 ★★★★☆	Select Care Bronze, Bronze, ST, INN, Dep25	Bronze	Medical	Albany	Individual	\$424.57	<input type="button" value="View Details"/>
<input type="checkbox"/>	 ★★★★☆	Bronze, ST, INN, Dep25	Bronze	Medical	Albany	Individual	\$425.43	<input type="button" value="View Details"/>
<input type="checkbox"/>	 ★★★★☆	Bronze, ST, INN, Dep29	Bronze	Medical	Albany	Individual	\$430.46	<input type="button" value="View Details"/>
<input type="checkbox"/>		Select Care Bronze, Bronze, ST, INN, Dep29	Bronze	Medical	Albany	Individual	\$437.31	<input type="button" value="View Details"/>

Comments about the New York exchange which were a part of the experimental sample that mentioned the decision-support tool were either negative or expressed confusion over plan choices:

- “This website is overwhelming. I feel like it would take most of a day to properly sift through all of the options and then I would still have questions.”
- “I picked the plan that looked well rounded for an adult. Some were labeled pediatric dental and others said things like acupuncture [sic]. The plan I picked looked like a traditional adult plan.”
- “the descriptions are confusing. i chose as i did [sic] because the most expensive plan did not seem better than this one”

*HealthSource RI*

The HealthSource RI likely is the most distinctive decision-support tool among the other interactive tools. It provides plan details sooner in the process than others, in fact, after the consumer enters their age, the plan details immediately appear. The user is then prompted to enter their income for subsidy eligibility on a bar left of the plans, followed by sliders to help determine plan generosity which will be discussed momentarily.

Yet, unlike the other decision-support tools, the ordering of the plans offered is not by premium, beginning with the lowest. Instead, Rhode Island defaults to showing silver plans first, followed by gold, then bronze, and finally the one catastrophic plan. Furthermore, Rhode Island does not order plans within this medal level entirely based on premium. The three top spots for each medal level contain the lowest premium plan of that level for each insurer, ordered by premium. For example, the silver plans are ordered Neighborhood Health Plan of Rhode Island, (\$192/month), UnitedHealthcare (\$213/month), Blue Cross Blue Shield of Rhode Island (\$224/month), which are then followed by plans of increasing premiums beginning with the least expensive plan that has not yet been ranked which is Neighborhood Health Plan of Rhode Island, (\$204/month). By using this system, individuals see plans from each of the three careers before they even see second least expensive silver plan on the exchange.

Although users can filter the plans by medal level and carrier, Rhode Island has a unique method for helping to determine which medal level of plans should be suggested. Consumers can move three sliders that will then reorder plans based on their suggestions, moving another medal level to the top:

- “How frequently do you or your family use medical services?” Ranges from infrequent to frequent

- “Does anyone in your family have a chronic condition or illness — like asthma or diabetes – that you need to take special medicine, or need to see a doctor often for?” Ranges from no conditions to many conditions
- “Would you rather pay less each month or pay less out of your pocket when you need health services?” Ranges from less each month to less for services

Figure G, Rhode Island Decision-Support Tool with Sliders

The screenshot displays the HealthSource RI website interface. On the left, there are three sliders for customizing results: 'How frequently do you or your family use medical services?' (ranging from Infrequent to Frequent), 'Does anyone in your family have a chronic condition or illness...' (ranging from No conditions to Many conditions), and 'Would you rather pay less each month or pay less out of your pocket when you need health services?' (ranging from Less each month to Less for services). The main area shows 'Plan Options' with filters for Health, Dental, Insurer, and Metal Level. Four plan options are listed, all categorized as Silver:

Plan Name	Monthly Cost	Annual Cost (Low/High)	Deductible	Out-of-Pocket	Action
NHPRI Neighborhood COMMUNITY	\$192	\$2,303 / \$6,303	\$2,500	\$4,000	COMPARE
UHC UnitedHealthcare Silver Compass HSA \$2000	\$213	\$2,560 / \$6,560	\$2,000	\$4,000	COMPARE
BCBSRI BlueSolutions for HSA Direct 2600/5200	\$224	\$2,692 / \$6,692	\$2,600	\$4,000	COMPARE
NHPRI Neighborhood VALUE	CLICK TO COMPARE	2,448 / 8,798	\$2,800	\$6,350	COMPARE

Each slider has five possible positions with default locations in the middle position. Again, the exchange defaults to displaying silver plans first if the sliders remain in the middle. If the sliders move an aggregate of three spots to the right (moving each one to the right by one spot, moving one two spots to the right and one other one spot, or moving two to the right by two spots and one to the left by one spot), then the plan will display gold first, followed by silver, bronze, and catastrophic. Likewise, moving the sliders an aggregate of three spots to the left will display bronze, then silver, gold, and catastrophic. Surprisingly, even selecting the most minimal

insurance options on the sliders will still result in bronze plans being displayed first, not catastrophic. This suggests that the designers of the exchange may not want consumers to select such a plan since the single catastrophic plan is always at the bottom of the search results, no matter the options selected.

Rhode Island also uses a plan comparison tool that allows a maximum of four plans to be compared with details such as HSA qualification, size of network, co-insurance/co-pays, and prescription drug coverage. Finally, the Rhode Island decision support does not provide information about cost sharing or many other plan features on its initial page, but it does include potential annual cost, deductible, and maximum out-of-pocket expenses. The annual cost ranges from a “low” (the premium over twelve months) to “high” (the premium over twelve months plus the out-of-pocket maximum).

### *Vermont Health Connect*

Vermont Health Connect takes an approach far different than any of the other decision support tools as it uses a non-interactive basic tool rather than the interactive (NCQA classified as sophisticated) tools used by the other exchanges. There are two major methods for individuals to select health plans: The first method is select a medal level and then view a PDF that compares the plans of the medal level. There are eight total PDFs that contain plan information, including four PDFs that compare silver plans with cost-sharing reductions. The link to each PDF is accompanied by a short description of that medal level, such as “Platinum & Gold Plans – plans with higher monthly premiums and lower out-of-pocket costs.”

The second method and the only way that individuals can directly compare plan details is to access a one page PDF which lists all eighteen plans from two carriers. Plans are listed at the top (by medal level) while the rows contain information such as the medical and prescription

deductibles, co-insurance/co-pay for office visits, urgent care, ER visits, etc. in some detail.

However, the table contains 29 rows of information for each of twelve types of plans, leading to a total of 348 cells of information for the consumer to consider.





Not unexpectedly, the comments that users randomized to Vermont Health Connect made were quite negative:

- “It was a lot to compare.”
- “Reading that chart with all the insurance plans was CONFUSING. It's no wonder the general public hates insurance companies. I simply went with the lowest deductible, lowest max out of pocket plan. It's too confusing otherwise. Insurance is a scam.”
- “That was an EXTREMELY confusing chart to try to decipher...”
- “I think it was the cheapest cost. The chart was very hard to look at and was very overwhelming.”
- “Seems really confusing, I chose I high deductible because i'm not expecting any usage.”
- “This chart is so "busy" it's nearly impossible to use.”

Finally, although consumers are able to calculate their premium tax credit and availability of reduced cost-sharing plans using a calculator, this information is not connected to the PDFs. Consumers need to record or remember the subsidy and then subtract in order to calculate their actual premium, while examining the PDFs displaying the plans.

### *Language Features*

Another important method of supporting insurance choice may be to provide support for those who may prefer languages other than English. The northeastern states that maintain state-based exchanges contain varying numbers of individuals who speak limited English, as shown in Table D, below. All of the exchanges except Vermont allows for at least partial translation of the exchange website into Spanish. However, for the decision-support tool itself, English is the

only option for all the exchanges except for Connecticut and Maryland, which provide Spanish translation. With terms such as deductible or coinsurance, those without a strong grounding in English may experience some additional challenges.

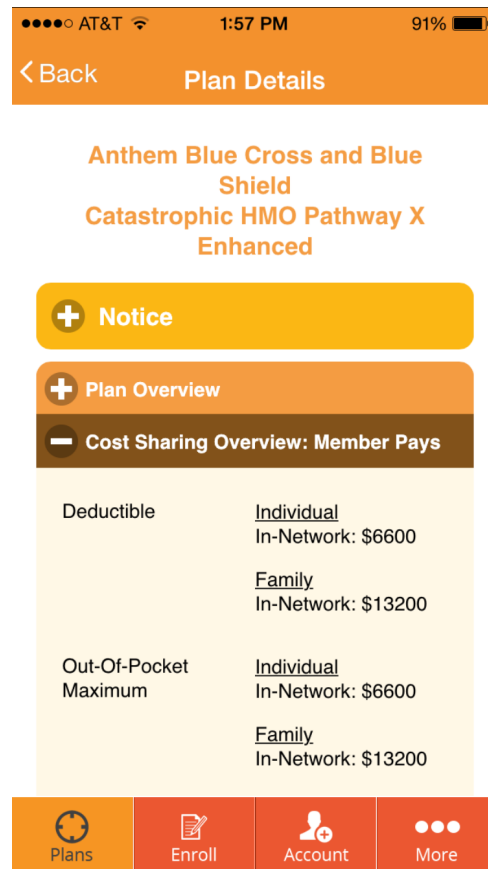
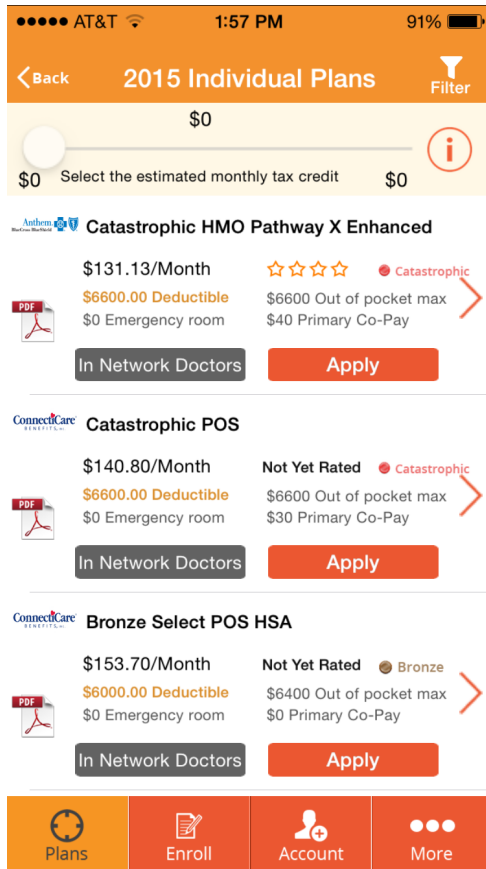
Table D, Select US Census Data on Language (US Census Bureau 2013)

	CT	MA	MD	NY	RI	VT
Foreign Born population	13.6%	15.0%	14.0%	22.1%	13.1%	4.1%
Speak language other than English at home	21.5%	21.9%	16.7%	29.9%	21.1%	5.2%
Limited English Proficient	8.4%	8.9%	6.4%	13.4%	8.7%	1.5%

### *Mobile Sites and Apps*

Another consideration for policymakers are the individuals who access exchange websites through mobile devices. This is especially a concern for vulnerable populations. For example, Black Americans are more likely to use smartphones than Whites (Smith 2014). All of the northeast exchanges maintain sites that work on mobile devices, but only the Connecticut exchange allows individuals to select plans through a dedicated mobile interface: an app for Apple iOS and Android. The Massachusetts and Rhode Island mobile websites direct users to the full version of the website in order to select plans, while the Maryland, New York, and Vermont exchanges do not provide such guidance. Within the Connecticut app, individuals can see plan choices and access detailed information, as well as filter selections. Although individuals cannot use side-by-side comparisons as occurs in the full webpage, the remaining functionality of the full decision-support tool appears to be entirely functional.

Figures I and J, Access Health CT App



## Experimental Assessment of Decision-Support Tools

### *Study Design*

Although these decision-support tools vary greatly in design, what is likely the best way to assess decision-support tool effectiveness is to see how well individuals are able to select plans with the exchange itself. In order to compare how effectively exchanges facilitate the purchase of insurance, a randomized trial was conducted with an online sample. Individuals were provided with a randomized fictional scenario, selected a health insurance plan within a randomized state-based exchange, and then surveyed about their experience, health insurance knowledge, and demographic background.

Participants were recruited from Amazon's Mechanical Turk service and compensated \$1 for completing the survey. The Mechanical Turk service allows users to independently complete "Human Intelligence Tasks" such as surveys, transcription, photo tagging or other tasks in exchange for payments, and past experience with similar surveys show that data quality is relatively high (Buhrmester, Kwang et al. 2011). Users for this study needed to be verified to be living within the United States to better simulate the potential population who will use the health insurance exchanges and must have also completed at least 100 previous Human Intelligence Tasks to avoid any new users who may have difficulties with the Mechanical Turk website.

Individuals were asked to follow a link from Mechanical Turk to the Qualtrics hosted-survey itself where they were randomized to one of five states and one of two prompts with ten total different survey treatments. Connecticut, Massachusetts, New York, Rhode Island, and Vermont were the possible states with Maryland omitted due to its similarity to Connecticut's decision-support tool. Survey participants were informed that they would be selecting plans based on a fictional scenario and they should choose an insurance plan based on the needs for

that individual in the scenario. Again, there were two possible prompts but each began in similar fashion. Both scenarios had individuals who were 25-years-old, made \$40,000 annually, the only members of their household, and not pregnant. The scenario individuals were also residents of the county that contains the capital city for that state.

Then the scenarios began to differ with the health status of the individuals. One prompt suggested that the individual is not in need of that much insurance coverage (hereafter referred to as the low insurance prompt) with the text “You have no major health problems, visit the doctor rarely, and have no reason believe that you will need much healthcare in the upcoming year.” The other scenario suggested a far less robust health status (hereafter referred to as the high insurance prompt), “You have some health problems, visit the doctor frequently, and believe that you will need much healthcare in the upcoming year.”

The reasoning behind these scenarios was to create a situation that was easily understandable for the participant so that any weaknesses in their decision-making would likely not be caused by mistakes unrelated to the decision-support tool itself. The age of 25 years made individuals eligible for catastrophic plans. \$40,000 of annual income was selected for two reasons. One, it would not complicate the decision about health plan by introducing advanced premium tax credits which could introduce greater variation and would have made Vermont far less testable as individuals would have needed to visit two separate web pages. Two, \$40,000 is not an unsubstantial income but one that could be easily adversely impacted by selecting too generous of a health insurance plan or facing too much out-of-pocket spending, meaning that a range of medal level choices could be financially viable options but with some income restraint.

After being shown the scenario, individuals were then reminded of the relevant information that they would need to enter on the website in a shorted form in the order they

would need to enter the information, for example “(Hartford County, age 25, not pregnant, only member of the household, \$40,000 income).” Participants were then directed to a link, which would open a new tab or window with the decision-support tool. It is also important to note that this experience was slightly different for each exchange with different information sometimes being necessary (such as smoking status) and different methods for accessing the support tool on the exchange website.

Participants would then select a plan and return to the survey to enter the carrier, name of the plan, and the medal level of the plan. Data entries about the carrier and plan name were not analyzed since carriers varied so greatly from state to state and the name of the plan was sometimes entered incorrectly (with responses such as “hmo bronze” or “blue cross” being uncommon but not entirely absent). Both these questions were included to incentivize individuals to actually visit the exchange website and select a plan instead of merely entering nonsense. No participant’s survey results were rejected due to a lack of coherence in plan choice; individuals were told that they would be paid regardless of survey completion within the informed consent provided at the beginning of the survey, as directed by Yale IRB guidelines. Finally, the time that individuals spent deciding and entering the information based on their choice was also measured.

Individuals were then asked how important each of the seven factors were for picking selecting a plan, using a five-point scale. These factors were: Deductible, Premium, Copay, Coinsurance, Out-of-Pocket Maximum, Carrier/Network, and Medal Level. The respondents’ confidence in selecting an appropriate plan was then assessed, asking them to rate on a scale from 0 to 100. The survey then allowed participants to make optional comments about why they

selected the plan that they did; 153 of the 403 participants made such comments, suggesting a degree of personal investment in the survey by the participants.

The participants' satisfaction with the decision-support tool was then assessed on a five-point scale; a N/A option was included since several of the listed features did not exist in all exchanges (time to select a plan, ability to sort by plan features, information about quality, and the overall experience). Participants were then asked to self-rate their knowledge of the insurance terms used earlier in the study, on a five-point scale. Demographic information (gender, US residency, health insurance status, age, and highest level of education) was also collected.

The survey was granted an IRB exemption by the Yale University Human Subject Committee (IRB Protocol Number #1504015596), and the data were analyzed with a copy of SAS 9.3.

### *Results*

Four hundred and three (403) individuals completed the survey. Random assignment of these individuals among the ten experimental groups resulted in distribution shown in Table E below:

Table E, Count by State and Insurance Level

	CT	MA	NY	RI	VT	Total
High Insurance	40	41	39	41	40	201
Low Insurance	39	36	38	54	35	202
Total	79	77	77	95	75	403

The primary outcome measure was how likely individuals assigned to each group were likely to select an appropriate for their assigned scenario (using a methodology to be described later). Secondary outcome measures were the users self-rated experience selecting a plan (rated

on a scale from one to five with five being the best possible experience), their confidence in their choice (rated from zero to 100), and overall the generosity of the selected plan (determined by medal level selected with one indicating a catastrophic plan and five a platinum plan).

. For the participants whose prompt was a healthy individual with low insurance needs, individuals generally selected plans that corresponded to that health status, with 38% selecting a bronze plan. However, a decent proportion selected platinum (9%) and gold (20%) plans, with 29% in total selecting these more costly plans. However, this distribution was not consistent across the five states as shown in Table F below:

Table F, % in each Medal Level, Low Insurance

	Catastrophic	Bronze	Silver	Gold	Platinum
CT	46%	31%	5%	15%	3%
MA	14%	50%	14%	14%	8%
NY	8%	63%	13%	13%	3%
RI	4%	30%	30%	33%	4%
VT	0%	23%	23%	20%	34%
Total	14%	38%	18%	20%	9%

For example, individuals assigned to Connecticut selected the catastrophic plan the most, while those assigned to New York preferred bronze plans and those assigned to Vermont chose the platinum plan the most.

Results differed for the participants whose prompt was a less healthy person with higher insurance needs, as shown in Table G, below:

Table G, % in each Medal Level, High Insurance

	Catastrophic	Bronze	Silver	Gold	Platinum
CT	18%	40%	8%	28%	8%
MA	24%	59%	10%	5%	2%
NY	3%	67%	8%	21%	3%
RI	5%	27%	39%	24%	5%
VT	0%	25%	25%	28%	23%
Total	10%	43%	18%	21%	8%



Individuals assigned to the high insurance group also selected bronze plans most frequently (except in Rhode Island and Vermont), and even more than those assigned to the low insurance group. There was also large variation among the states as also occurred in the low insurance group.

A series of t-tests with a Bonferroni correction of the average medal level selected yielded several significant differences between the treatment groups, as shown in Table H, below. In only two states (New York and Rhode Island) did the difference between the high and low groups reach the level of significance. Individuals assigned to the Rhode Island high insurance group seemed to pick plans of a higher medal level (more generous plans) than those assigned to most other groups as occurred with both Vermont's high and low groups.

Table H, Medal Level in Choice<sup>3</sup>

		CT		MA		NY		RI		VT	
		High	Low	High	Low	High	Low	High	Low	High	Low
CT	High	-	.7	.1	.8	-.2	.6	-.9	.1	-1.1	-.7
	Low	-.7	-	-.6	.1	-.9	-.1	-1.6	.6	-1.8	-1.4
MA	High	-.1	.6	-	.7	-.3	.6	-1.0	.0	-1.1	-.7
	Low	-.8	-.1	-.7	-	1.0	-.2	-1.7	-.7	-1.9	-1.5
NY	High	.2	.9	.3	1.0	-	.8	-.7	.3	-.9	-.5
	Low	-.6	.1	-.6	.2	-.8	-	-1.5	-.5	-1.7	-1.3
RI	High	.9	1.6	1.0	1.7	.7	1.5	-	1.0	-.2	.2
	Low	-.1	.6	.0	.7	-.3	.5	-1.0	-	-1.2	-.8
VT	High	1.1	1.8	1.1	1.9	.9	1.7	.2	1.2	-	.4
	Low	.7	1.4	.7	1.5	.5	1.3	-.2	.8	-.4	-

However, although medal level may be an important factor in comparing the exchanges, what likely matters more than just the difference in insurance plan generosity is whether or not individuals select plans that are appropriate for their needs. The low insurance scenario would seem most appropriately matched to a participant's selection of a catastrophic or bronze plan, although to a risk adverse person, a silver plan would also be appropriate. Likewise, the high

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<sup>3</sup> The shaded cells represent significance at a level of  $p < .05$ . The chart is read with the cell value as the column category mean subtracted from the row category mean.

insurance scenario would likely require a gold or platinum plan, although an individual might be willing to risk high out-of-pocket costs with a silver plan.

To measure this in the context of the survey, the medal level that individuals selected was compared to what would be considered the “correct” medal level and a value of one was assigned if the plan choice were correct and zero if it were incorrect. In order to resolve the ambiguity about if silver plans would be correct for either scenario two separate criteria for plan correctness were created. For criteria A, individuals need to select one of the three most appropriate plans (again, catastrophic/bronze/silver for low insurance or silver/gold/platinum for high insurance). For criteria B, individuals have a narrow series of correct choices with the same plans being designated as correct but with the subtraction of silver as a correct choice for each category (catastrophic/bronze as correct for low insurance or gold/platinum for high insurance). Applying this analysis, one finds the following results in Table I below:

Table I, Proportion Selecting Correctly

		Criteria A	Criteria B
CT	High	.43	.35
	Low	.82	.77
	Combined	.62	.56
MA	High	.39	.27
	Low	.53	.42
	Combined	.45	.34
NY	High	.51	.41
	Low	.63	.53
	Combined	.57	.47
RI	High	.68	.34
	Low	.63	.30
	Combined	.65	.32
VT	High	.58	.33
	Low	.66	.43
	Combined	.61	.37

Individuals in the low insurance scenario selected correctly 70% of the time by criteria A and 52% by the less forgiving B criteria. Those in the high insurance scenario selected correctly less frequently, with 47% correct under criteria A and 29% under criteria B. Overall 59% selected correctly under criteria A, and 41% under criteria B. In analysis, it seems appropriate to control for high insurance otherwise a state such as Rhode Island that had greater numbers of low

insurance participants (who generally selected well) than high insurance participants (who generally selected poorly) would appear to be more effective guiding individuals to appropriate insurance plans than it in reality was. One way of controlling for this is to conduct a logistic regression, as described in Table J, including dummy variables for each state and one for the high insurance scenario. Massachusetts was selected as a reference since those participants performed least successfully under both criteria.

Table J, Logistic Regression Odds Ratios on Correct Choice<sup>4</sup>

	<b>Correct Choice (Criteria A)</b>	<b>Correct Choice (Criteria B)</b>
<b>Connecticut</b>	2.0**	2.5***
<b>Massachusetts</b>	ref	ref
<b>New York</b>	1.6	1.7
<b>Rhode Island</b>	2.1**	.8
<b>Vermont</b>	2.0**	1.2
<b>High Insurance</b>	.4***	.3***

For criteria A, individuals in Connecticut, Rhode Island and Vermont were roughly twice as likely to select correct plans than those in Massachusetts. For criteria B, only Connecticut was significant with individuals selecting correctly plans 2.5 times as frequently. For both of the

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<sup>4</sup> \* represents  $p < 0.1$ , \*\* represents  $p < 0.05$ , \*\*\* represents  $p < 0.01$

criteria, individuals assigned to the high insurance scenario were less than half as likely to select correct plans as compared to those assigned to the low insurance plan.

However, although the logistic regression might have greater power, it might not fully represent the true impact the decision-support tools have, as being assigned to the high insurance may have a different impact among the states. For example, those randomized to Vermont were almost as likely to select correctly no matter the scenario while in Connecticut those assigned to the low insurance scenario were far more likely to select correctly.

Thus, a series of t-tests were used to compare the number of correct choices classified by high or low insurance status for both criteria A and criteria B after ANOVA was conducted. A Bonferroni correction was used. The results are presented in Tables K through N below:

Table K, High Insurance Scenario Correct Choices, Criteria A

	CT	MA	NY	RI	VT
CT	-	.25	.11	-.26	-.33
MA	-.25	-	-.14	-.51	.58
NY	-.11	.14	-	-.38	-.44
RI	.26	.51	.38	-	-.07
VT	.33	.58	.44	.07	-

Table L, High Insurance Scenario Correct Choices, Criteria B

	CT	MA	NY	RI	VT
CT	-	.28	.12	.06	-.15
MA	-.28	-	-.16	-.22	-.43
NY	-.12	.16	-	-.06	-.27
RI	-.06	.22	.06	-	-.21
VT	.15	.43	.27	.21	-

Table M, Low Insurance Scenario Correct Choices, Criteria A

	CT	MA	NY	RI	VT
CT	-	.04	-.02	.19	.36
MA	-.04	-	-.06	.15	.32
NY	.02	.06	-	.21	.38
RI	-.19	-.15	-.12	-	.17
VT	-.36	-.32	-.38	-.17	-

Table N, Low Insurance Scenario Correct Choices, Criteria B

	CT	MA	NY	RI	VT
CT	-	.12	.06	.44	.54
MA	-.13	-	-.07	.31	.41
NY	-.06	.07	-	.38	.48
RI	-.44	-.31	-.38	-	.10
VT	-.54	-.41	.48	-.10	-



In the case of high insurance, Rhode Island and Vermont seemed to provide the most correct outcomes compared to most of the other states' exchanges with criteria A. With criteria B, only Vermont and Connecticut were better than Massachusetts. Under the low insurance scenario, criteria A showed significance with those assigned to the Vermont exchange selecting worse choices than Connecticut, Massachusetts, and New York. Under criteria B, Rhode Island and Vermont both had less correct outcomes than Connecticut, Massachusetts, and New York.

The self-rated experience of individuals using the decision-support tools was also somewhat decisive. Average experience is rated on a five-point scale of the average ratings for the time to select a plan, the ability to sort by plan features, the ability to tell plan quality, and the rating of the overall experience. Only users exposed to the Vermont health insurance exchange rated their experiences as lower than those of the other exchanges, also using t-tests with a Bonferroni correction, as shown in Table O, below:

Table O, Self-Rated Experience

	CT	MA	NY	RI	VT
CT	-	-.28	-.30	-.02	1.0
MA	.28	-	-.02	.26	.78
NY	.30	.02	-	.28	.75
RI	.02	-.26	-.28	-	1.0
VT	-1.0	-.78	-.75	-1.0	-

An equivalent test of the confidence of individuals in their plan choice failed to be significant, while the time taken to select a plan was only higher for Massachusetts compared to Rhode Island (112 seconds greater).

There were also some significant correlations between several outcome variables as well as the self-rated knowledge that consumers had of healthcare terms (rated on a five-point scale as an average of the participant's knowledge of healthcare terms), as shown in Table P, below:

Table P, Significant Correlation Coefficients (R squared)<sup>5</sup>

	Self-rated Experience Average	Seconds to select plan	Confidence in choice	Knowledge of terms	Medal Level
Self-rated Experience Average	-	-	8.6 (.17)	.30 (.15)	-7.5 (.02)
Seconds to select plan	-	-	-	.00065 (.03)	-
Confidence in choice	.12 (.17)	-	-	.11 (.11)	-
Knowledge of terms	3.4 (.15)	1541 (.03)	8.7 (.11)	-	-
Medal Level	-.13 (.02)	-	-	-	-

From this, we find that participants who had better experiences selecting their plan were also more confident in their choice and selected plans of a lower medal level than those who had

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<sup>5</sup> All significant at the p<.01 level

a worse experience. Those with higher level of health insurance knowledge were also more confident, spent more time selecting plans, and had a better experience selecting plans.

Turning to the criteria by which individuals selected plans, participants rated the annual premium as most important to their decision, followed by the plan's deductible. The out-of-pocket maximum was the third most important, with copays following. Coinsurance was the fourth most important followed by the carrier and then the medal level itself which was least important. Between the low and high insurance prompts, the differences between the rated importance of these features was only significant for premium and copay: those with the low insurance scenario rated the annual premium as more important ( $p=.075$ ) as they did for copays ( $p=.0085$ ). Finally, individuals felt more knowledgeable about deductibles, premiums, copays, and out-of-pocket maximums with individuals feeling on average less than somewhat confident in their understanding of coinsurance, insurance carrier and medal level.

## Discussion

### *Decision-Support Tool Effectiveness*

One might have expected the type of decision-support (basic or sophisticated) to have the greatest impact upon how successfully individuals selected health insurance plans. The ability to sort by plan features and compare plans in detail with a few clicks would seem to provide value to the consumer over more traditional methods of simply listing plan information. It was the inability to provide such a more sophisticated service that forced the Maryland exchange, after great failure, to adopt Connecticut's decision-support tool. Yet, these results seem to suggest that the ability of decision-support tools to facilitate correct consumer choice does not turn solely on the availability of features. What does appear to have an important impact are the default plan options that the decisions-support tool initially suggests.

The decision-support tools used by these five exchanges may be appropriately classified into three groups: those that default to displaying catastrophic options first (Connecticut, Massachusetts, and New York), the default to silver first (Rhode Island), and no default plan (Vermont). Generally, when the health scenario of the individual matched that of the default insurance option presented, individuals were mostly successful in selecting their plans. Connecticut, Massachusetts, and New York did far better than the other two exchanges in the low insurance scenario. In the high insurance scenario, the same default to lowest cost premium exchanges did far worse.

From this result, one could simply conclude that individuals generally select one of the first insurance plans that they see regardless of the scenario, but the data actually suggest that the defaults could actually have a more subtle impact. Those participants assigned to Rhode Island did not select even a plurality of silver plans, though that choice was the default and is arguably

an acceptable plan for either scenario. In fact, those assigned to Rhode Island low insurance were most likely to select a gold plan, the plans that are displayed immediately following the first silver. Within the three exchanges that displayed catastrophic plans first, not one had more than a quarter select such a plan in the high insurance scenario. If individuals were selecting plans merely on the basis of convenience of the decision itself, we would expect far more to select the first plan type that they see.

Further supporting the hypothesis that the initial ordering of the plans is not the only determinant of plan choice is how even quite similar decision-support tools appear to result in different outcomes. For the low insurance scenario, we see that a plurality of those assigned to Connecticut chose a catastrophic plan, while a majority of those assigned to both Massachusetts and New York selected bronze plans. If plan ordering were the only factor in determining plan choice, we would likely not see these differences in exchanges that order their plans identically.

We see then that although ordering would appear to have a large impact on plan selection (based on the general trend of the success of the exchanges when the default matches the correct choice), this is not an entirely sufficient explanation as to the extent of this difference. Yet, for each scenario and for the four exchanges that order choice, the majority of individuals selected one of the first two medal level options displayed to users. One explanation might be that framing occurs with the initial plan options and individuals make a selection between those plans that they first encounter. For example, a Rhode Island assignee might first encounter silver and gold plans and then make a choice between those selections, instead of considering the harder to find but lower cost bronze and catastrophic plans. This may explain why so many selected gold plans in the low insurance scenario within the Rhode Island decision-support tool. What might be a rational choice between those two options (a marginal increase in premiums in exchange for

reduced financial risk) might appear to be an appealing tradeoff only because the individual has not considered a bronze plan. As individual who selected a gold for the Rhode Island low insurance scenario commented “Well I was looking at the premium but the out of pocket expense could be considerable for the cheapest plans so I decided to go with a higher premium so that my out of pocket would not be so high.” Individuals might not want a plan they perceive as the least generous, even if there are in fact even less generous plans that they did not see. This relative comparison of early insurance plans instead of an absolute comparison might explain how the default plan choice appeared to matter so much in plan selection.

### *Success and Dissatisfaction with Vermont*

Vermont’s unique basic decision-support tool might have presented the most surprising results overall. Participants greatly disliked selecting plans using Vermont’s tool and commented on this displeasure frequently as was described earlier, but these individuals made some of the best choices, regardless of scenario. One reason for this might be that although it may be frustrating to sort through the data within the PDF, there is no default plan to provide a framing point to consumers. Individuals are forced to consider all of the options, which appear to help them to make a more accurate choice.

Yet, despite Vermont’s success in this regard, there is some cause for concern. The first is that participants assigned to Vermont generally purchased far more generous insurance than those assigned to other states. Those in the high insurance Vermont scenario purchased, on average, at least one medal level more generous plans than those assigned to Connecticut, Massachusetts, and New York. 34% in the low insurance scenario purchased platinum plans while 23% in the high insurance scenario did. Although confidence with the selected plan was not significantly different for any of the states, there was a correlation between experience with

the decision-support tool and the confidence in plan choice on the individual level. One explanation for this purchase of over-generous plans might be that individuals feel less confident in their choice and thus try and purchase a more generous plan to reduce risk. This would correspond to the existing literature that suggests that individuals with less knowledge about their healthcare plan purchase more generous insurance than is needed (Handel 2013).

This choice to purchase overly generous insurance might well reduce the individual's risk, but the cost just for premiums of such plans would seem to make them an irrational choice. With an annual income of \$40,000, the individuals in the scenario would be spending nearly \$7,500, or almost 19% of pretax income, on health insurance for the lowest cost platinum plan. One additional complication might be the overall high cost of health insurance plans in Vermont where even a silver plan (non-HDHP) costs over \$465 a month. Yet, for example, the platinum plan reduces the medical deductible to \$150 from the \$1,900 in the silver plan for an increased cost of about \$1,900 annually in premiums. It would be difficult to suggest that a rational consumer within the low insurance scenario would rationally select a platinum plan, which might be a concern for Vermont policymakers since the decision-support tool may be partially responsible for guiding consumers to poor insurance choices.

### *Medal Levels*

The ubiquitous use of medal levels might not be achieving the results that the designers of these exchanges may have hoped. Under the wider net of criteria A where three of the five plans would be considered correct, fewer than 59% of the participants selected a correct plan. If individuals did interpret medal levels as rough guidelines of plan generosity, then we would expect this number to be far higher in each of the exchanges individuals can easily sort by medal level. Yet, it appears that individuals do not use medal levels in to make their insurance decision

since participants rated medal levels the least valuable to their the decision-making process.

Participants were also the least confident in understanding what is meant by medal level, rating their knowledge less than that of their knowledge even of coinsurance and insurance carrier/network.

Some of the comments reflected this misunderstanding. For example, one Vermont low insurance scenario assignee said of the gold plan “I think it was the cheapest cost.” An individual in Massachusetts high insurance that selected a bronze plan seemed to understand the importance of the out-of-pocket maximum when comparing to plans within the same medal level, but perhaps, they did not consider that a higher medal level might reduce overall out-of-pocket costs: “With someone who is only getting a salary of 40K, a higher monthly premium would be tough to pay. Also, this plan has a lower out of pocket max than others in the same monthly premium range, making this a better choice if the patient thinks she will have to use this insurance quite a bit during the next year.”

### *Plan Choice*

Beyond the self-rated importance of plan features such as premiums and deductibles to choice of plan, individuals also expressed their preferences regarding the decision-support tools of these five exchanges through the optional comment section. Many seemed to display a clear understanding of the premium and maximum out-of-pocket cost balance: “I selected the cheapest plan from a provider with an excellent quality rating. For this scenario I figured I didn't need too expensive of a plan since I had low expected medical costs.” Some even described specific plan features in addition to the larger choice of plan generosity: “In addition to the medal level, the main reason for choosing this plan is that it includes 3 free visits to my primary care physician and no referral is needed for specialists. This can be very important for someone with medical



issues.” Others used their own experiences to inform their choice “I currently have BCBS and have had UHC in the past. Since [I] know BCBS is better, that was a contributing factor as I scrolled through the plans.”

There were also some idiosyncratic choices described in the comments that were not illustrated by ranking of the importance of premium, deductibles, etc. Some expressed a preference for specific plan types (“I was looking for an HSA plan with a reasonable deductible [sic] and maz [sic] out of pocket.” “Seemed like most bang for buck plan in price level. Plus it's a PPO which is preferable” “this PPO isn't going to make me nasty having to get referrals, I can go to specialists without having to deal with some idiot bureaucrat for ‘permission’”). Some of these might be concerning for policy makers. For example, one individual said that they “liked the acupuncture and massage discounts” within the New York health insurance exchange. Others might have viewed plan details and not seen that preventive care visits for all plans have no cost sharing, “Covers preventive care at no charge, gym reimbursement, etc. Not likely to need other care.”

### *The Massachusetts-Connecticut Divide*

One surprising finding is that those assigned to Connecticut were by some measures more successful than those assigned to Massachusetts despite the many similarities in their decision-support tools. One explanation for this difference may be the limited information provided at first with the Connecticut exchange as compared to the Massachusetts exchange. It would at first seem that the consumers in the Massachusetts exchange would benefit from the greater number of options provided to them, but the opposite might in fact be the case. Individuals are already comparing large amounts of information and perhaps supplying this additional information weakens consumer choice.

### *Comments on Number of Choices*

Most of the comments that referenced the decision-support tool itself focus on the amount of information presented to the consumer. Interestingly, only two comments of the total 153 made across all exchanges referenced the number of plans available in general, both of which seemed to want less choice. One of these comments was randomized to New York, the state with the most available plans (145), but the other was a subject randomized to Vermont, which had the fewest number of plans (18). These comments suggest that Vermont's method of providing information to consumers might overwhelm consumers and make the number of choices seems too great to be able to reasonably compare, even though, in fact, there were fewer choices than in other states.

### *Error*

This study has many potential sources of error; however, most of these errors will result in only a more conservative estimate of significance since they are likely to occur randomly without relation to any of the treatment groups. The first and likely most common source of error involves the incentive of individuals to ignore the instructions and not select a plan based on the decision-support tool or to spend as little time as possible selecting a plan. This likely occurred in some cases as one individual selected a plan in as little as ten seconds; however, the average time spent on plan selection was nearly five minutes, as intended by the survey results.

Yet, in reality such little time selecting a healthcare plan is fairly unlikely to occur. The incentives in this survey are somewhat misaligned to those of an individual who is actually purchasing an insurance plan since the participant is paid based on survey completion and not the time spent selecting a plan. In reality, individuals may benefit for hundreds of dollars an hour for time spent on health insurance plan selection (Handel and Kolstad 2013).

There also might be some error related to the prompt provided to the participants. There was some variation in the prompts due to the specific requirements of the exchange. Exchanges require differing information before beginning the anonymous search, for example, pregnancy status, smoking status, and exact birthdate. Thus, the information supplied to participants in the prompt was slightly different, which could result in some error. Providing the same information to all participants might have minimized that error, but providing that length of information may have also been confusing to participants. Yet, this difference in treatment groups may have had some impact upon the participant.

There was also a slightly different process that participants used to access the decision-support tool. This difference may have introduced some error. For example, those who were assigned to Vermont immediately reached that state's decision-support tool while those who accessed New York plans needed to initially enter information. This, most likely, altered the amount of time needed to select a plan and could have impacted the perceived experience as individuals were required to take more actions themselves.

Figure K, Pictorial Directions Provided to New York Participants

**Find Us In Your Community!** Visit NY State of Health's NEW events map at <http://info.nystateofhealth.ny.gov/events>

## Individuals & Families

Beginning January 1, 2014, you and your family will have many new health insurance options available through the Individual Marketplace. You can quickly compare health plan options and apply for assistance that could lower the cost of health coverage. Individuals and families may also qualify for free or low-cost coverage from Medicaid or Child Health Plus through the Marketplace. Anyone who needs health coverage can apply.

### Get Started

Returning Users  
[CLICK HERE TO LOGIN ▶](#)  
 With your NYS GOV ID.


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New Users  
[CLICK HERE TO REGISTER ▶](#)  
 Create a NYS GOV ID.

### View Plans Now

Preview plans before applying.

**1) Enter 12201** Enter Zip Code



**2) Fill Captcha**  [Privacy & Terms](#)

**3) Click here**

Another potential source of error involves individual's specific knowledge of healthcare information related to the decision-support tool that they were assigned. An individual might be familiar with a specific provider or carrier within that state and overweight that information relative to an individual without that experience. For example, an individual might only be familiar with Blue Cross Blue Shield and thus may select a plan provided by BCBS for that reason. This might result in some differential error.

Mechanical Turk users might also not be the most appropriate study population with which to examine how uninsured individuals or members of the general public might select insurance. Due to the nature of the Mechanical Turk service, users would likely be generally more familiar with computer technology than especially those individuals who lack regular computer and internet access. Such familiarity might provide a different experience than that of

a less-computer literate individual, potentially biasing results. The mode age range of participants was 26 to 35, and the mode amount of completed education was a four-year college degree

Finally, an important source of error might be the relatively underpowered nature of the study. Using five separate groups a sample size of at least per group 39 is required for 80% power at an alpha level of  $p < .05$  to detect effects of a medium size or greater (Cohen 1992). The need to analyze the high and low groups separately required the division of the sample to reduce the sample to closer to twenty per group. This would result in only large effects being detected with the same power considerations. Thus any medium or small effects would likely not be detected by this experiment, which may reveal greater differences between the exchanges.

## Conclusion

### *Summary*

This thesis conducted a qualitative assessment and experimental analysis of state-based health insurance exchange decision-support tools and how individuals select plans using these tools. Each of the exchanges has made different policy choices in designing their support tools, ranging from the number and type of plans available to the default plans choices. The evidence suggests that individuals within this experiment seemed to be heavily influenced by those design choices, with the Rhode Island and Vermont exchanges performing best under scenarios where individuals needed to purchase generous insurance and the Connecticut, New York, and Massachusetts exchanges being more successful at appropriately matching people to lower cost forms of insurance.

Connecticut, Rhode Island, and Vermont seemed to perform better overall. The reason for this success is unknowable by this experiential design. However, these exchanges differ from the others by either reducing the cognitive burden on users by burying complexity in the site (Connecticut), providing a default silver option that is generally a good choice (Rhode Island), or providing no default option and thereby forcing users to compare all the choices (Vermont).

### *Policy Implications*

One of the largest implications of the research involves the distributive fairness of different marketplace designs. If marketplaces encourage users to select less generous plans, less adverse selection might occur with regard to sicker individuals selecting more generous plans. However, if users are directed by the sites to select more generous plans, the healthy individuals who select incorrectly will effectively subsidize the less healthy. Yet, states that improve

decision-making for all individuals could still face a welfare loss due to adverse selection that could be greater than the welfare gained. As an additional option, states could also adopt an approach like Rhode Island where almost all individuals are directed to buy silver plans, reducing adverse selection but forcing those with poor health to face high out-of-pocket costs. State policymakers need to consider that they are making one of these choices by their current exchange design and to determine if such a design is in line with their policy goals.

Again, it seems as if the state has a great opportunity to influence consumer choice by framing the available insurance plans. The majority of individuals tested selected one of the first two medal levels displayed, showing that this decision of how to order plans has great power to influence consumer choice. States could adopt the Vermont model of providing no initial default and forcing consumers to consider a wider arrange of plan options, although as currently implemented in Vermont, individuals appear to have not enjoyed the process. Assuming states do also value the experience of plan selection, which might be necessary to maintain public support, exchanges could use the Vermont model but with modifications that make it interactive and easier to select a plan. One method could be to use the Rhode Island plan's "generosity sliders," but force users to select the locations on the sliders before viewing plan options as to not to bias the user.

Furthermore, from a governance standpoint, the fact that the interactive tools performed somewhat equivalently or even worse than what was a likely a fairly inexpensive one page document might be cause for concern for seemingly evidence based-policy. States such as Rhode Island are continuing to develop even more advanced versions of these tools with somewhat questionable evidence as to their effectiveness (HealthSource RI 2015). Although this

study does not provide enough evidence to show that such efforts are misguided, it does raise questions about how justified these expenditures are.

### *Routes for Future Research*

One path for future research involves seeing exactly how individuals select plans within the exchange, beyond merely measuring outcomes and self-reported choice information. The average participant in this experiment spent almost five minutes selecting a plan but seemed frequently to not utilize options beyond those initially displayed. The question remains if participants decided to select between those initial plans within the first displayed medal groups or if they also considered more generous plans and rejected them in favor of the initial plans. If users' screen and mouse movements could be tracked for a similar experiment, it might allow for a better understanding of how individuals made their choice.

Another experimental design to consider would be to alter the incentives so they are better aligned with those of individuals actually selecting plans within an exchange. Such a design could provide incentives to participants for selecting correct plans based on medical expense background, with penalties for selecting incorrect plans, as would occur for an individual in an exchange (although this may be economically infeasible).

One promising route for understanding how individuals select insurance would be to conduct research similar to that done by researchers on Medicare Part D, which would compare plan choice with actual medical spending. Although this would not directly illustrate why individuals selected the plans that they did, it would show how effectively individuals chose, allowing for comparisons across exchanges using the data from those actually purchasing health insurance within those exchanges.



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