

**Improving Healthcare Service Design for Undergraduate Students: A
Modified Design Thinking Approach**

By

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Introduction

College represents a pivotal period in a young adult's life, serving as both a place for higher education and a pathway to independent living, often for the first time. During this time, college students must juggle numerous critical responsibilities: academic demands, career aspirations, financial management, and fundamentally, their personal wellbeing. Traditional college-aged students (aged 18-24) deal with significant amounts of stress, inconsistent sleep schedules, unhealthy diets, and typically alcohol and substance consumption. Yet despite these health challenges, research shows a striking underutilization of student healthcare services, with only 32% of college students accessing available student healthcare resources (Tran & Silvestri-Elmore, 2021). So why are traditional college students not using available on campus healthcare services?

This raises essential questions:

1. What barriers prevent college students from accessing existing student healthcare services?
2. How might healthcare business models be reimaged to address this demographic's specific needs?
3. Is there a universal approach that works, or do various student populations require or prefer tailored healthcare solutions?

This study aims to identify and understand the key factors that influence undergraduate students' healthcare decisions and to develop actionable service design recommendations that could improve on-campus healthcare utilization rates among this population.

Background

Health Among Undergraduate Students

For traditional undergraduate university students (ages 18-24) attending a 4-year higher education institution, many factors play a significant role in determining health and wellness. For many students, these years are challenging developmentally as they transition to adulthood and face independence, possibly for the first time (Eisenberg, Golberstein, & Gollust, 2007). Even though the age of eighteen signifies no longer being medically considered a pediatric patient, the undergraduate age group is still considered adolescent, as psychological and cognitive development continues during these years (Nunez, 2024). Due to the typical lifestyle experiences college students face, they are exposed to additional health risks, including stress, poor sleep schedules, lack of proper nutrition, sexual activity, and drug and alcohol use (Tran & Silvestri-Elmore, 2021). Within the undergraduate student population, the underclassmen (first and second-year students) may be even more vulnerable to health risks, as they are likely to live in communal housing arrangements, have larger introductory-level courses, and be involved in various social gatherings, like joining Greek life (Turner & Keller, 2015). Amongst various health concerns, mental health ranks among the top 5 specific diagnostic categories seen in college health services (Turner & Keller, 2015). According to a questionnaire study conducted at a large public university, 60% of students reported feeling overwhelming anxiety, 41% felt so depressed they found it difficult to function, 12% seriously considered suicide, and 53% felt as though things were hopeless (Cushman, et al., 2021). Despite these raised levels of health risks, utilization of available student health resources is low. Common reasons students may not seek healthcare include time limitations, financial troubles, and lack of awareness of available resources (Montagni, 2017). Based on an undergraduate study from the Journal of the American

College Health, it was found that college students appear to be 1. Relatively uninformed about common healthcare issues, 2. More concerned with body image and attractiveness than serious diseases, and 3. Not regular users of healthcare facilities (Delene, 1990). The traditional undergraduate student is an age group in which there are heightened health risks (due to typical lifestyle), so this is an essential time for universities to provide education and resources to prevent chronic severe issues related to lifestyle (Turner & Keller, 2015). It was also shown that higher education institutions play a crucial role in bridging this gap between healthcare and student knowledge, competencies, and skills (Chowhan, 2024).

What resources are available to students currently?

Several healthcare models are currently available to undergraduate students, each with distinct advantages and limitations that affect utilization patterns.

On-Campus Health Centers

On-campus health centers play a role in providing relatively accessible health care to students, including acute care, first aid, vaccines, sexual health services, and mental health resources (Nunez, 2024). In addition to this, some may provide more specialized services as well, like sports medicine and dermatology (Nunez, 2024). Even though these services are provided, campus health is not often seen as a source of primary care or even the “go-to” method for students to seek out healthcare. This is supported by The College Health Surveillance Network, which studied healthcare utilization across 23 US universities and found that only 32% of enrolled students utilized student health services in a year (Turner & Keller, 2015). When a focus-group research study among college students was conducted, many possible explanations for students using alternative healthcare facilities were mentioned: inconvenient operating hours, a desire for confidential treatment, concern about the quality of treatment, and lack of awareness

of available services (Hansen, 2025) (Delene, 1990). If people perceive a lack of convenient access to primary care, they will often forego care entirely, a common trend seen within the undergraduate population (Gorevic, 2016). Moreover, when healthcare is needed, they are more likely to visit urgent care or hospital emergency rooms, which are the least cost-effective and efficient methods of receiving healthcare (Gorevic, 2016).

Telehealth

In this new landscape of technological innovation, telehealth serves as a viable healthcare option for undergraduate students. Telehealth is a significant method of healthcare delivery utilizing technology. In *America's Healthcare Transformation: Strategies and Innovations*, telehealth is described as “a virtual or remote visit between patient and clinician as opposed to an on-site visit” (Gorevic, 2016). In the *Journal of American College Health*, a study was conducted in which participants acknowledged the value of having the option to use technology to talk to someone about mental health issues, primarily for its ease of use and accessibility. Participants stated that it could help those who need immediate assistance when an in-person meeting is not feasible (Gatdula, 2022). According to another study conducted in Florida amongst a sample of undergraduate students, a significant advantage of telehealth systems is the elimination of barriers to receiving healthcare; students also saw the advantage of being able to schedule appointments with healthcare providers they would typically not be able to do, and telehealth was seen as a more efficient way to organize and store patient health information (Bull, 2016). When a survey was conducted to assess the advantages and disadvantages of telehealth delivery models, the results were as follows:

- Perceived Advantages: convenience (24.4%), efficiency (21.4%), accessibility (26.5%), connectedness (4.8%), and others (Bull, 2016)

- Perceived Disadvantages: lack of trust (34.5%), impersonality (28.1%), affordability (5.9%), and communication (2.3%) (Bull, 2016)

Concierge Practices

With services like OneMedical being provided through Amazon Prime membership, as well as other private concierge services, like the Center for Executive Medicine College Care Program (cemcollegecare.com) or RescueMeWellness (rescuemewellness.com), concierge services are an additional healthcare option for traditional undergraduate students. In concierge practices, patients receive comprehensive and timely service for a retainer price. Doctors generally provide “better” service to smaller numbers of patients because they are able to interact with their patients on a more personal level and understand their needs better (Gavirneni & Kulkarni, 2014). However, this cost is not covered by insurance, and the cost of such services is a large factor to consider. In a survey conducted among college students, several students stated that if a price point for a healthcare service were too high, it would be a dealbreaker (Bull, 2016). On the other hand, if undergraduate students were to value their time or have severe/chronic conditions, the value of timely, comprehensive care may outweigh the cost of the retainer price (Gavirneni & Kulkarni, 2014).

Theoretical Concepts

The following theoretical concepts provide a framework for understanding undergraduate healthcare decision-making processes and service preferences.

Agency

Agency is described as “a unique aspect of humans, a capacity for self-direction and self-transformation (Gao, 2024). In this context, agency is the autonomy of an undergraduate student to take charge of their own healthcare needs and be involved in the decision-making and

management of their health. When undergraduates go to a university, it is an expectation that they will have more autonomy in their lives, including their healthcare management (Montagni, 2017). Patient autonomy has the potential to reduce suffering that comes from a lack of awareness/knowledge, as well as allow the patient to feel more compassion and empathetic care from an organization, even before their first appointment (Wojciechowski, Lee, & Mylod, 2016) .

Agency in healthcare decision-making is particularly relevant for college students transitioning from parent-managed healthcare to independent management. This transition involves not only learning to recognize health needs but also developing confidence in making appropriate healthcare decisions. According to Gao et al. (2024), the development of healthcare agency requires both knowledge acquisition and experiential learning, suggesting that universities have an opportunity to support this developmental process through targeted educational interventions and service design.

Usability

In the National Library of Medicine, usability is defined as: “the extent to which a product can be used by users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use” (Parmanto, 2016). Usability is an important factor to consider in all healthcare offerings, especially in telehealth offerings, and it is a useful method to evaluate and improve the quality of the technological service (Parmanto, 2016).

Connection, Communication, and Customization

Undergraduate students face a unique period in their lives in which they are exposed to new levels of independence, as well as lifestyle and routine changes. Connection is defined as “a relationship in which a person, thing, or idea is linked or associated with something else”

(Oxford, 2025). A large part of perceived satisfaction is how connected students feel to their healthcare service offerings, and the connection is systemically a challenge to integrate when designing a healthcare service (Berry L. L., 2019). A study conducted in 2020 at the University of Illinois found that affective (socio-emotional) and instrumental (technical) communication behaviors from healthcare providers were important for perceived service quality (Adu Gyamfi, Lippert, Lance, Baldwin, & Hooker, 2021). Additional factors that would affect the perceived satisfaction with healthcare delivery are the level of customization provided. Healthcare models need to not only fit within the schedules of college students but also be customized to their mental, emotional, and financial status' (Berry L. L., 2020). Customization requires looking at the service and delivery systems from the patient's perspective and matching them to fit their individual needs (Ma, Zhang, & Chen, 2024). Communication is also a key component of patient satisfaction as well. According to a survey conducted among undergraduate college students, participants considered effective communication to be a core component of the service delivery process, leading to increased trust in the service offering and more patient involvement later on (Niraula, 2024). Together, connection, communication, and customization work together to create a triad of patient-perceived satisfaction.

Framework: Design Thinking Method

Design thinking, as proposed by Hasso Plattner Institute of Design at Stanford, is a 5-stage iterative process (Dam, 2020). Overall, it is an interdisciplinary, human-centric approach to problem-solving that focuses on emphasizing and assessing needs before a solution search begins (Foster, 2019). By leading with empathy, designers are encouraged to gain a deeper understanding of their users and be more sensitive (Høiseth, 2018). With the increasing agency of the healthcare consumer, healthcare organizations are being challenged to design new patient

experiences (Blanton, 2023). This is especially useful as human-centered design is being integrated into many health systems to ensure services and patient experiences are created with the end user in mind (Blanton, 2023). All of these factors combined show the necessity for understanding the healthcare needs of this traditional undergraduate age group and seeking to find the best way to cater to them.

The five stages of the non-linear process are as follows:

Empathize

The goal of this phase of the design process is to understand the user's needs deeply. It is the work a team or designer puts into understanding the user (Shanks, 2024). Efforts should be put in to truly comprehend all aspects of user needs, physical, emotional, social, etc. This can be done through ethnographic and participatory research. In a study conducted on the theory and enactment of design thinking, "empathy was stressed as important and, in order to empathize, different principles/mindsets were seen as crucial: being open, avoiding being judgmental, and being comfortable around people with different backgrounds and opinions" (Carlgren, Rauth, & Elmquist, 2016).

Define

In this phase, the team or designer must clearly state the user's need, utilizing information from the research conducted in the empathize phase. It is where the scope of the concept becomes clear. This should craft a meaningful and user-centric problem statement (Shanks, 2024). This means that the problem is not based on organizational goals but instead done in a human-centered manner (Dam, 2020).

Ideate

Here is where innovation and assumption challenges take place to try and imagine all possible solutions to a user's needs. Idea generation is a core aspect of the DT process because it holds the potential to turn a concept into a tangible solution for users. There is a wide range of activities that can be included in the ideation process, such as body-storming, mind mapping, sketching, and others (Shanks, 2024).

Prototype

Prototyping is the early stage of attempts to create a physical solution. It is an educational, iterative stage in which there is an attempt at a tangible and experienceable solution for users to test (Carlgren, Rauth, & Elmquist, 2016). The goal of this phase is to spark conversation, test different options, and find out what works and does not quickly and cost-effectively (Shanks, 2024).

Test

While this is the 5th stage of the process, the DT method is not linear, and this is not a “final” step. This is where feedback is gathered on solutions generated in the earlier phases. Again, the focus should be on understanding the user and trying to comprehend their emotions and experience with the derived solution and the reasoning behind it. Testing can send a team back to prototyping, ideation, or even the empathize phase based on the findings and insights gathered from testing.

A diagram below shows the DT Process in concept:

Table 1

Design Thinking Process in Concept

Phase	Empathize	Define	Ideate	Prototype	Test
Definition	Understand the user's need	Create a user-centric	Generate ideas and innovative solutions	Create a tangible and	Receive feedback

		problem statement		experienceable solution	and user input
Example	Focus groups with college students about their healthcare needs.	College students need accessible health support that fits their busy schedules and budget constraints.	Brainstorm solutions: 24/7 teletherapy app, peer support groups, stress-management workshops, Select the most promising ideas.	Create a tangible basic mock-up of the app interface. Outline key Features: quick appointment bookings, text. video chat options, etc.	Set up scenarios where team members act out the roles of healthcare providers and students.

Methods

Service Design Process

This project is a preliminary investigation that employs choice-based conjoint analysis within a modified design thinking framework to systematically understand how traditional undergraduate students make healthcare decisions and identify optimal student healthcare service configurations. The design thinking method creates better products and services by empathizing with student needs, generating innovative solutions, and ensuring those solutions are practical and meaningful (Meinel, 2020). When applied in a healthcare setting, the design thinking process allows for a focus on the patient and a more creative, experience-driven approach to meeting patient needs (Meinel). Various studies have been conducted to assess different aspects of healthcare offerings in the context of undergraduate university students. For this project, a modified design thinking model will be applied to understand the healthcare needs of undergraduate students and generate actionable service recommendations.

Conjoint analysis, particularly choice-based conjoint (CBC), was selected as the key methodology because healthcare decisions inherently involve tradeoffs between multiple factors (cost, accessibility, quality, and convenience). CBC was chosen for this project because it is one of the most commonly used conjoint analysis approaches (Johnson, 2011) while also being cost-effective (Orme, 2019). CBC is especially well-suited for understanding student healthcare preferences because it displays the choices consumers make in the real world and reflects actual consumer choices, rather than just stated preferences (Orme, 2019). This is particularly valuable for student healthcare services where students must realistically weigh multiple factors when selecting care options. Additionally, CBC provides results that are more accurate in predicting actual market choices compared to ratings-based conjoint methods (Orme, 2019) allowing for more actionable insights into how students make healthcare decisions.

Within the larger design process, qualitative research (i.e., focus groups) will be used to develop an understanding of consumer behavior by combining the context behind consumer decisions - their emotions, motivations, and unarticulated needs - with information from the literature. This will inform the problem definition and ideation phases. Quantitative data (CBC Survey) will be used to evaluate these insights and the resulting service designs.

To conduct CBC analysis, Sawtooth software was chosen. Using Sawtooth Software's CBC software tools in Lighthouse Studio will enable a sophisticated analysis, as the software has been proven to handle both main effects and interactions (Johnson, 2011). Sawtooth software has been tested and validated in numerous projects, and the technology continues to adapt and evolve based on various research findings, which shows commitment to the validity of their processes (Johnson, 2011). This project develops an understanding of student healthcare needs to inform prototype development with the goal of providing a recommendation to existing healthcare service processes.

In order to fit within the limits of sample size and resources, this project adapts the traditional design thinking methodology by using focus groups for the empathize phase, thematic analysis to define key decision factors, and choice-based conjoint analysis to systematically evaluate how students make tradeoffs between different healthcare service features. This approach allows for quantitative measurement of preferences and simulation of optimal service configurations.

For this process, the traditional design thinking process was adapted to focus on the empathize, define, and ideate phases, with streamlined prototype and testing phases. This aligns with the nature of this preliminary investigation. This adaptation reflects several practical constraints: the project's preliminary prospective, single-semester timeline, limited sample sizes, lack of funding, and no implementation. While traditional design thinking typically involves multiple iterations,

feedback loops, and eventual in-market launch, this project is an initial exploration intended to inform potential future service design and implementations.

This modified approach below allowed for concept validation while remaining within the scope and resources available for the project (Table 2).

Table 2

Adapted Design Thinking Process

Design Thinking Phase	Traditional Approach	Modified Approach	Rationale
Empathize	Multiple rounds (4-6) of 2–3-hour focus groups with 8-12 participants each (Stewart, Shamdasani, & Rook, 2007)	A single round of two 1.5-hour focus groups and a literature review with 3-8 participants	Adjusted for available time, resources, and single-researcher constraints while still gathering meaningful user insights.
Define	Multiple stakeholder sessions and team-based analysis with iterative refinement. The problem statement is cross-functionally validated.	Researcher identifies key dimensions of student healthcare decision-making based on focus group findings and literature review	Streamlined to focus on essential analysis and documentation methods that can be effectively executed by a single researcher while maintaining validity through literature support and advisor guidance.
Ideate	Multiple brainstorming sessions and workshops with a cross-functional team, subject matter experts, end users, and stakeholders. Iterative refinement over weeks. (Cernasev & Axon, 2023)	Single whiteboarding session and literature-informed ideation of potential attributes and levels that capture key aspects of healthcare service design. This is conducted by the primary researcher and AI assistance for brainstorming. Limited refinement and iteration.	Modified to compensate for the absence of a large team, enabling meaningful concept development within resource constraints.

Prototype	Physical prototypes, service simulations, and experience prototypes with 2-3 refined concepts and feedback loops. There are multiple iterations and a low to high-fidelity progression.	Develop and validate CBC experimental design and choice task presentation.	Allows for preliminary testing of ideas within the constraints of an academic project timeframe and budget.
Test	Usability testing, A/B testing, pilot implementation, and user observation are used to gather statistical data, qualitative feedback, and expert review. There are multiple testing rounds and iterative improvements.	A CBC survey via Sawtooth and analyze results using Hierarchical Bayes estimation, market simulations to identify optimal service configurations.	Focuses on basic validation of concepts rather than comprehensive and iterative implementation testing, aligning with the exploratory nature of this academic project

Note: CBC = Choice-based Conjoint

The empathize phase forms the foundation of this preliminary investigation. It focuses on gathering rich qualitative insights about traditional undergraduate student healthcare experiences and needs through qualitative methods.

Empathize

The design thinking process began with a focus on understanding the student perspective through qualitative research. To gather rich qualitative data and achieve a contextualized understanding of student healthcare experiences, focus groups were conducted following established healthcare research practices (Cernasev & Axon).

Sample Plan: Following Stewart et al.'s (2007) recommendation for sample size, two focus groups with 6-8 participants each were conducted. This study utilized a convenience sample of 6-16 (2 groups of n= 3-8) traditional undergraduate full-time students at a large public university. According to David W. Stewart, Prem N. Shamdasani & Dennis W. Rook's focus

group structure recommendations, because of the pre-existing limitations of generalizability within focus group research, convenience sampling was employed. While efforts were made to include a diverse group of participants, the limitations of convenience sampling are acknowledged.

Recruiting: Focus group participants were recruited through campus clubs and Greek life organizations. Recruitment flyers were distributed through undergraduate student emails, campus organizations, and social media platforms. To encourage participation, students were offered dinner during the focus group sessions. The recruitment flyer can be found in Appendix A.1.

Guide Development: A semi-structured interview guide designed by the primary researcher informed by a literature review was utilized to guide the discussion (Stewart, Shamdasani, & Rook, 2007). This approach aligns with market research best practices, as it enables both structured questioning about existing student healthcare services and the flexibility to deviate at the moment and dive deeper into unexpected insights about student needs. The guide can be found in Appendix A.4

Focus Group Structure: During the first 20 minutes, participants were given time to eat and get to know one another. For the next 70 minutes, the goal was to open discussion and gain deeper insights into students' healthcare experiences, needs, and preferences.

Informed by the literature review and qualitative data gathered in the empathize section, the define phase employed thematic analysis to synthesize findings into a singular problem statement.

Define

The focus group transcript was analyzed using thematic analysis with an inductive approach, where themes were developed directly from participant responses (Cernasev & Axon). Thematic analysis is a method for identifying, analyzing, and interpreting patterns of meaning ('themes') within qualitative data (Braun & Clarke). This analysis identified key themes and patterns with the goal of identifying fundamental problems, understanding needs, and synthesizing findings into a singular problem statement. An inductive approach to thematic analysis was used, which is particularly useful when exploring new terrain (Clarke & Braun), as is the case with understanding undergraduate healthcare needs through a design thinking lens.

The analysis process followed these best practices:

1. Initial Processing

- a. Focus group recordings were transcribed using Zoom transcription software.
- b. Field notes and Post-it artifacts were compiled.
- c. Transcripts were prepared for coding in Microsoft Word

2. Coding

- a. Line-by-line reading of the transcripts.
- b. Initial Codes based on participant statements. This followed DeCuir-Gunby et al.'s (2011) framework, as codes were generated directly from the raw data rather than from predetermined theories or frameworks (DeCuir-Gunby, Marshall, & McCulloch).
- c. Each code was clearly defined to ensure consistency.
- d. Auto coding using claud.ai was also used to help inform code development. The codebook structure incorporates elements of Reyes et al.'s (2024) "living

codebook" approach, which emphasizes the dynamic nature of code development throughout the analysis process (Reyes, Bogumil, & Welch).

This organizational structure helps manage the coding process while maintaining flexibility to capture student perspectives on healthcare services.

3. Codebook Development

- a. Similar codes were grouped into categories.
- b. The codebook was then developed through an inductive approach to qualitative analysis of focus group transcripts. A structured coding table was developed with three levels: Broad Topic, Code, Definition (See Appendix A.5).
- c. Codes were color coded by broad topic.

The systematic approach to thematic analysis was used to define a problem statement and identify key decision dimensions (i.e., decision factors, decision context, choice parameters, etc.). This approach ensured that the following conjoint analysis would capture the most relevant and actionable aspects of student healthcare decision-making, providing a solid foundation for the ideation phase.

Problem Statement. Current healthcare services for undergraduate students inadequately address the need for a balanced healthcare service model that prioritizes accessibility and affordability while supporting their transition to independent healthcare management.

With clear dimensions, the ideation phase leveraged both traditional and innovative approaches to generate potential solution attributes.

Ideate

Following the problem statement development, the researcher conducted a digital whiteboarding session on Mural was conducted to generate potential attributes and levels (See Appendix A.6). This ideation process to brainstorm potential attributes of student healthcare services drew upon insights from qualitative data in the focus group thematic analysis, and literature review. For each identified attribute, realistic attributes and levels were brainstormed. Focus group findings and current market offerings were used to ensure levels reflected actual student preferences and possible choices.

Claude.ai was also utilized as an ideation tool to expand the exploration of potential attributes and levels, with careful attention to exclude any Personal Identifiable Information (PII) or sensitive student data from AI interactions. The hybrid whiteboarding approach allowed for free-form exploration of ideas and potential attributes that could address the challenges that were identified in the problem statement. The combination of traditional brainstorming methods and carefully managed AI assistance provided broader perspectives while maintaining ethical research standards and data privacy.

The initial list of attributes and levels was evaluated with the following:

- Frequency analysis (how often each potential attribute was mentioned in focus groups or appeared consistently in literature)
- Independence Testing (check that attributes do not measure the same thing, and excluding redundant attributes)

The ideation phase concluded with a final set of 5 attributes and 2-4 levels (for each) that formed the foundation for the choice-based conjoint analysis design (See Appendix B.2).

To move from abstract ideas to concrete concepts, the prototype phase utilized the creation and validation of a CBC analysis survey

Prototype

The prototype phase focused on developing and validating the experimental design for the choice-based conjoint analysis. Following the selection of the defined attributes and levels in the ideate phase, a survey was developed in of Sawtooth Software's Lighthouse Studio 9 program.

Survey Structure. The survey begins with initial introductory questions about healthcare behaviors, followed by two construct scales and a CBC exercise with 10 choice tasks. Construct scales were placed before the CBC tasks to minimize potential ordering effects. The survey then ends with demographic questions for segmenting purposes.

Construct Scale Selection. The problem statement identifies the need for a balanced healthcare service model that effectively prioritizes accessibility, provider consistency, and affordability while supporting their transition to independent healthcare management. Both the HSC and ACS scales directly measure aspects of this transition - autonomy-connectedness measures independence alongside relational needs, while health consciousness assesses proactive health involvement.

Autonomy-Connectedness Scale (ACS-30). The Autonomy-Connectedness Scale (ACS-30) is a 30-item self-report measure (Bekker & Assen, 2006) that conceptualizes autonomy as a balance between self-reliance and the capacity to maintain intimate relationships (Bekker M. H., 1993). The scale measures three distinct components:

Self-Awareness (SA). The capacity to recognize one's own opinions, wishes, and needs, and the ability to express these in social interactions (Bekker & Assen, 2008).

Sensitivity to Others (SO). Measures responsiveness to others' opinions, wishes, and needs, as well as empathy and the capacity for intimacy and separation (Bekker & Assen, 2008).

Capacity for Managing New Situations (CMNS). Assesses feelings of comfort/discomfort in new situations, flexibility, and inclination toward exploration versus dependence on familiar structures (Bekker & Assen, 2008).

To manage survey length while still capturing key dimensions of autonomy most relevant to healthcare decision-making, this study will incorporate only the Self-Awareness (SA) and Capacity for Managing New Situations (CMNS) subscales of the Autonomy-Connectedness Scale, as these components specifically measure undergraduate students' ability to recognize their own healthcare needs and navigate novel healthcare environments (Bekker & Assen, 2006).

The SA subscale measures students' ability to recognize and articulate their own healthcare needs, a capability many undergraduate students struggle with when transitioning to independent healthcare management (Bekker & Assen, 2006). This aligns with research showing that college students are relatively uninformed about common healthcare issues and not regular users of healthcare facilities (Delene, 1990). Similarly, the CMNS subscale assesses comfort with navigating unfamiliar situations, which corresponds to focus group findings about students' anxiety when accessing new healthcare environments. This relates to (Gorevic, 2016)'s observation that if people perceive a lack of convenient access to primary care, they will often forego care entirely, explaining why only 32% of enrolled students utilize student health services annually (Turner & Keller, 2015).

Health Consciousness Scale (HCS).

The Health Consciousness Scale (Gould, 1988) is a 9-item self-report measure that assesses an individual's awareness, interest, and involvement with their health (Espinosa & Mulenga, 2024). The scale measures four interconnected dimensions:

Health Self-Consciousness (HCSC). Assesses the degree to which individuals think about and are attentive to their health (Espinosa & Mulenga, 2024).

Health Involvement (HI). Measures proactive participation in activities that inform health status (Espinosa & Mulenga, 2024).

Health Alertness (HA). Evaluates perceived ability to notice and identify changes in health status (Espinosa & Mulenga, 2024).

Health Self-Monitoring (HSM). Measures self-initiated efforts to track physical health aspects (Espinosa & Mulenga, 2024).

These two scales were specifically selected because they measure complementary aspects of undergraduate healthcare decision-making. The Health Consciousness Scale assesses students' overall awareness and involvement with their health, which directly relates to their likelihood of seeking preventive care and responding appropriately to health concerns. The Autonomy-Connectedness subscales measure students' ability to identify their own healthcare needs (Self-Awareness) and navigate unfamiliar healthcare systems (Capacity for Managing New Situations). Together, these constructs provide a comprehensive framework for understanding how students' internal characteristics influence their healthcare decisions and preferences.

Research shows that higher health consciousness is associated with preventive health behaviors, medical adherence, and healthcare engagement (Espinosa & Mulenga, 2024).

A summary table of the two construct scales in below:

Table 3

Construct Table Summary

Construct	Method	Source	What
Health Consciousness Scale: HCS (Gould 1988)	Items are scored as 0 = statement does not describe you at all, 1 = statement describes you a little, 2 = statement describes you about fifty-fifty, 3 = statement describes you fairly well, and 4 = statement describes you very well	Bearden, W. O., & Netemeyer, R. G. (1999). Handbook of marketing scales. SAGE Publications, Inc., https://doi.org/10.4135/9781452224923	As specified by the author, the Health Consciousness Scale (HCS) seems to tap an overall alertness, self-consciousness, involvement, and self-monitoring of one's health.
Autonomy - Connectedness Scale (ACS-30) (2006)	Items were scored with a 5-point scale, namely, 1(disagree), 2 (disagree slightly), 3 (disagree slightly and agree slightly), 4 (agree slightly), and 5 (agree).	Bekker, M. H., & Assen, M. A. (2006). A Short Form of the Autonomy Scale: Properties of the Autonomy-Connectedness Scale (ACS-30). Journal of Personality Assessment, 86(1), 51-60.	The Autonomy-Connectedness Scale (ACS-30) is a 30-item self-report measure (Bekker & Assen, 2006) that conceptualizes autonomy as a balance between self-reliance and the capacity to maintain intimate relationships (Bekker M. H., 1993). The subscales Self-Awareness (SA) and Capacity for Managing New Situations (CMNS), directly address key challenges identified in the focus groups. The SA subscale measures students' ability to recognize their own needs and opinions, which is crucial for healthcare decision-making as students transition away from parental guidance. The CMNS subscale assesses comfort with unfamiliar situations, directly relating to students' expressed anxiety about navigating healthcare systems independently for the first time.

By assessing how independent students feel in making health decisions, how connected they are to support networks, and how aware they are of their own health issues, this study can segment the CBC data into meaningful groups (i.e. a highly health-conscious and autonomous student may make different healthcare choices than a student with low health consciousness with low autonomy).

CBC Survey Development.

1. Experimental Design Development
 - a. Used Sawtooth Software to generate statistical design.
 - b. Generated optimal number of choice tasks per respondent (8-12) to balance statistical efficiency with respondent fatigue.
 - c. Ensured level balance and minimal overlap within choice tasks.
 - d. Incorporated randomization to control for order effects.
2. Choice Task Design
 - a. Developed clear, consistent formatting for presenting attribute levels (See Appendix B2)
 - b. Standardized descriptions across all attribute levels
 - c. Incorporated "none" option in each choice task
3. Develop Supporting Questions
 - a. Include questions about current behavior, service usage, and demographics.
4. Pilot Testing
 - a. Conducted pilot test with 10-12 undergraduate students recruited through convenience sampling.
 - b. Gathered feedback on:
 - i. Clarity of attribute/level descriptions
 - ii. Task completion time
 - iii. Technical functionality
 - iv. Respondent patterns
 - c. Validated that completion time remained under 15 minutes.

Following the development and validation of the experimental design, the data collection was implemented through the testing phase. This focused on gathering quantitative validation of the proposed concepts through a structured student survey.

Test

Note: The test phase consisted of implementing the choice-based conjoint survey and analyzing results analyzing results using Hierarchical Bayes estimation: This approach aligns with the preliminary nature of this investigation and resource constraints.

Quantitative Component: Undergraduate Student CBC Survey

Sample Plan: This project utilized a convenience sample of 65 traditional, full-time undergraduate students. The criteria for inclusion were that participants were 18-24 years old and currently enrolled in the university full-time (12 or more undergraduate credits). For choice-based conjoint analysis, sample size requirements are based on the number of choice tasks per respondent and desired precision level. Using Sawtooth Software's sample size calculator, a sample size of 65 respondents would provide sufficient statistical power to estimate main effects (94.5% Confidence Interval, MOE: 11.89%, n=42000 population, 50% response distribution). While a larger sample (ideally 381 for 5% and 95% MOE) would allow for more detailed analysis, 65 respondents provided adequate statistical power for this preliminary investigation while acknowledging limitations in generalizability.

Recruiting: Survey participants were recruited through general education and introductory courses, as well as campus organizations. In order to encourage participation, personal and public social media platforms, and on-campus organizations (Greek Life and Student Clubs). To encourage participation, undergraduate students were offered extra credit in class and club points

(for campus organizations) in exchange for completion of the survey. Additionally, those who participated were entered into a raffle to win a \$50 gift card to a retailer of choice. While efforts were made to include a diverse group of participants, it is acknowledged that using a convenience sample means the preliminary study will not capture the full range of student experiences.

Data Analysis: Data analysis was conducted using CBC HB and Counts analysis, as well as Market Simulation.(See Appendix B.3). CBC analysis used Hierarchical Bayes (HB) estimation to calculate part-worth utilities for each attribute level, relative importance of attributes, standard errors. This generated aggregate preference shares. Market Simulation created different market scenarios using different attribute combinations. This generated a share of preference predictions and identified optimal feature combinations. Demographic data collection included access to reliable transportation, hometown, gender, and ethnicity to ensure representation across student segments and enable analysis of potential differences in healthcare needs and preferences across these groups.

The test phase produced quantitative evidence regarding which healthcare service attributes matter most to students, how students make tradeoffs between different service features, optimal combinations of service features, and potential adoption rates for different service designs.

This analysis approach allowed for a solid foundation for service design recommendations while maintaining alignment with the preliminary nature of the investigation.

CBC Analysis Specifications. The choice-based conjoint analysis was configured using a balanced overlap design with 10 random choice tasks per respondent. Each task presented two service options plus a "none" alternative. The experimental design achieved a design strength of 168.813 with standard errors below 0.10 for all main

effects. Hierarchical Bayes (HB) estimation was employed with 20,000 iterations including 10,000 burn-in iterations. The model converged successfully with an average root likelihood of 0.743, indicating good predictive validity.

Ethical Considerations

Before participation, all participants provided informed consent, and data were anonymized to ensure confidentiality. Participants also answered basic questions about their demographics, including age, year of school, gender, and residential status (out-of-state vs in-state student). Audio recordings of focus groups will be destroyed upon completion of thematic analysis to maintain participant privacy. Participants were informed of their right to withdraw from the study at any time without consequence. The study was conducted in accordance with the university's ethical guidelines for undergraduate research.

Limitations

The study is preliminary and has several significant limitations:

1. The streamlined design thinking process and limited resources may not capture the full complexity of healthcare needs and potential solutions. There are no iterations or feedback loops, no physical prototypes, and feedback is being gathered through structured survey responses rather than through extensive user testing sessions.
2. A small sample size (n=65) at a large public university in the Southwest limits the generalizability of findings and the ability to conduct deep statistical analyses. While the sample size of 65 participants provides adequate statistical power for main effects analysis using Hierarchical Bayes estimation (Johnson, 2011) this represents a preliminary investigation with acknowledged limitations for detailed segmentation analysis. According to standard sample size calculations for a population of 42,000

undergraduates, a sample of 381 would be necessary for $\pm 5\%$ margin of error at 95% confidence. However, for exploratory conjoint analysis in academic settings, smaller samples ($n=50-100$) can still provide valuable insights into attribute importance and preference patterns (Orme, 2019). To address this limitation, findings are presented with appropriate confidence intervals, and less emphasis is placed on fine-grained segmentation analysis that would require larger samples.

3. Convenience sampling from general education courses may not represent the broader population of undergraduate students at the university.
4. The lack of formal validation or in-market tests may affect the reliability and validity of recommendations.
5. Policy Context: This study was conducted within the framework of the Affordable Care Act (ACA), particularly the provision allowing students to remain on parental insurance until age 26. This context significantly influences student healthcare decision-making and service preferences. Changes to this policy framework could substantially impact the applicability of findings, particularly regarding:
 1. Financial considerations and willingness to pay
 2. Service model preferences
 3. Healthcare choice patterns

These limitations are acknowledged and should be considered when interpreting the results of this exploratory study.

Results

Qualitative Findings

Two 90-minute focus groups were conducted on January 29th and 30th, 2025, with a total of 9 participants. Despite 4 no shows combined across both sessions; the smaller sizes enable deeper discussion into the topics. Insights from the focus groups revealed both immediate behavioral patterns as well as deeper thematic insights about undergraduate healthcare decision-making.

Initial Healthcare Decision Making Patterns

The focus groups revealed consistent patterns in how traditional undergraduate approach healthcare decisions:

Initial Response Behaviors. A majority of participants considered contacting their mothers as a first response to a health-related concern. This revealed strong continued reliance and influence of parents on independent undergraduate lifestyle.

Quote. “I usually text my mom first. And if it's bad enough, I go to urgent care or campus health.”

Decision Process.

- a. Students consistently described a multi-step evaluation process:
 - i. “Wait-and-see” approach (“Try to wait it out for a week”)
 - ii. Self-diagnosis attempts
 - iii. Seeking validation from friends or family
 - iv. Considering practical factors (i.e., location and cost)
- b. Quote: “I kind of want to like I always think that like I'm making it up in my head and like I'm not actually saying try to just like wait it out for a few days.”

Key Thematic Findings

Starting from Scratch: First-Time Healthcare Navigation Challenges. Students consistently expressed uncertainty about navigating healthcare independently, often relying on parental guidance, despite seeking autonomy.

Quotes.

- “If we have things going on, our family will notice, but when you're on your own, you have to figure out like how to navigate healthcare by yourself... It's kind of like you're starting from scratch.”
- “I think it's also like a lot of people's first time navigating it on their own so like if we got sick at home Your family will notice, say, like, do we need to go to the doctor like having to like do that all for the first time by yourself would be like kind of scary.”

This aligns with literature describing this period as challenging developmentally, with students transitioning to adulthood and facing independence for the first time (Eisenberg, Golberstein, & Gollust, 2007).

No Time to Be Sick: Service Access Must Fit into Student Schedules. A major theme was the challenge of accessing student healthcare services around academic schedules. Weekend closures and difficulty balancing health needs and academic commitments.

Quotes.

- “Campus health isn't open on the weekends which is like the most convenient time to go to the doctor.”
- “I literally have zero time to like speak to a doctor or like take a day off.”

This validates literature findings about time limitations being a significant barrier to healthcare utilization. (Montagni, 2017).

Beyond Quick Fixes: The Value of Provider Relationships and Quality Care. Students expressed strong preferences for consistent provider relationships and comprehensive care approaches. This was shown through the repeated mention of the importance of provider familiarity and the criticism of rushed, transactional care.

Quotes.

- "Being more comfortable allows you to be a little vulnerable So you would say things that you didn't even like realize was going on with you"
- "I feel like Campus Health wants to like get everything like done... They don't really want to figure it out."
- "you were like band-aid fix, like they always have like certain conditions or whatever that they blame it on, and they don't look further into it. Like things like depression, or like things that they see typically in college students, but they don't even seem to like try to figure it out that much"

This finding both aligns with and extends existing research. (Berry L. L., 2019) 's emphasis on "connection" as a vital component of healthcare service satisfaction, particularly the need for socio-emotional communication identified by Adu Gyamfi et al. (2021). The desire for provider relationships also supports Wojciechowski's argument about the importance of patient autonomy and empathetic care, suggesting that students value providers who understand their unique context as undergraduate students (Wojciechowski, Lee, & Mylod, 2016). The findings suggest that students seek not just medical treatment, but meaningful

healthcare connections that acknowledge their transition to independent healthcare management.

All in One Place: Digital Integration is Essential. Students showed strong preferences for comprehensive digital systems while maintaining options for in-person care. This was shown through desire for digital access and acknowledgement of the value of comprehensive online systems.

Quotes.

- "like I like logging in and seeing like of all my stuff. And it's like, oh, you have an upcoming appointment."
- "Being able to go online and schedule something real quick would be convenient."
- "I like a comprehensive online system... it's like you get to see all of your medical records and stuff."

This extends beyond the literature review which primarily focused on telehealth rather than comprehensive digital integration.

Worth the Investment? Complex Financial Considerations. Students expressed complex views about healthcare costs, considering both immediate expenses and value over time. This was shown through different perceived value calculations based on perceived health needs.

Participants in both focus groups took consideration of necessity versus cost.

Quotes

- "I think that's an expensive thing. And it's not 100% necessary. Unless you, I think if you have health issues, it's more like necessary."
- "I feel like if I wasn't sick like it's another thing, I'm paying for that like I'm not using."

- “I think that they could have like a list of what insurance it takes or if it doesn't take insurance, what a copay would be or like a standard visit That'd be very helpful.”

These findings align with previous research on student healthcare financial decisions. Bull's study identified affordability as a key concern in healthcare service adoption, while Gavirneni & Kulkarni noted that students might value comprehensive care despite higher costs if they perceive sufficient benefit (Bull, 2016) (Gavirneni & Kulkarni, 2014).

The analysis reveals that undergraduate healthcare preferences are more complex than previously documented in literature. While convenience and cost remain important factors, students also value provider relationships and comprehensive digital integration.

These findings suggest the want for more nuanced healthcare service models that can adapt to evolving student needs while maintaining accessibility and quality of care.

Quantitative Findings

Throughout the analysis, statistical significance was determined at $p < 0.05$ using two-tailed tests. All reported differences between segments met this threshold unless otherwise noted.

Overall Attribute Importance:

For the context of this analysis, “a utility score is a numerical representation of the relative preference or desirability of an attribute level, or a product alternative- the higher utility, the more preferred” (Sawtooth, 2025).

After conducting the choice-based conjoint analysis, there was a clear hierarchy of importance for the service attribute levels presented in the survey:

1. Price (42.37%)
 1. Highest Utility: \$25 (with insurance coverage)

2. Location (21.36%)
 1. Highest Utility: On campus health center
3. Hours/Availability (11.2%)
 1. Highest Utility: Extended hours plus weekend availability
4. Provider Type (9.03%)
 1. Highest Utility: Doctor (MD)
5. Provider Relationships (8.07%)
 1. Highest Utility: Same provider every visit
6. Digital Integration (7.98%)
 1. Highest Utility: Basic Online Scheduling (appointment booking and cancellation only)

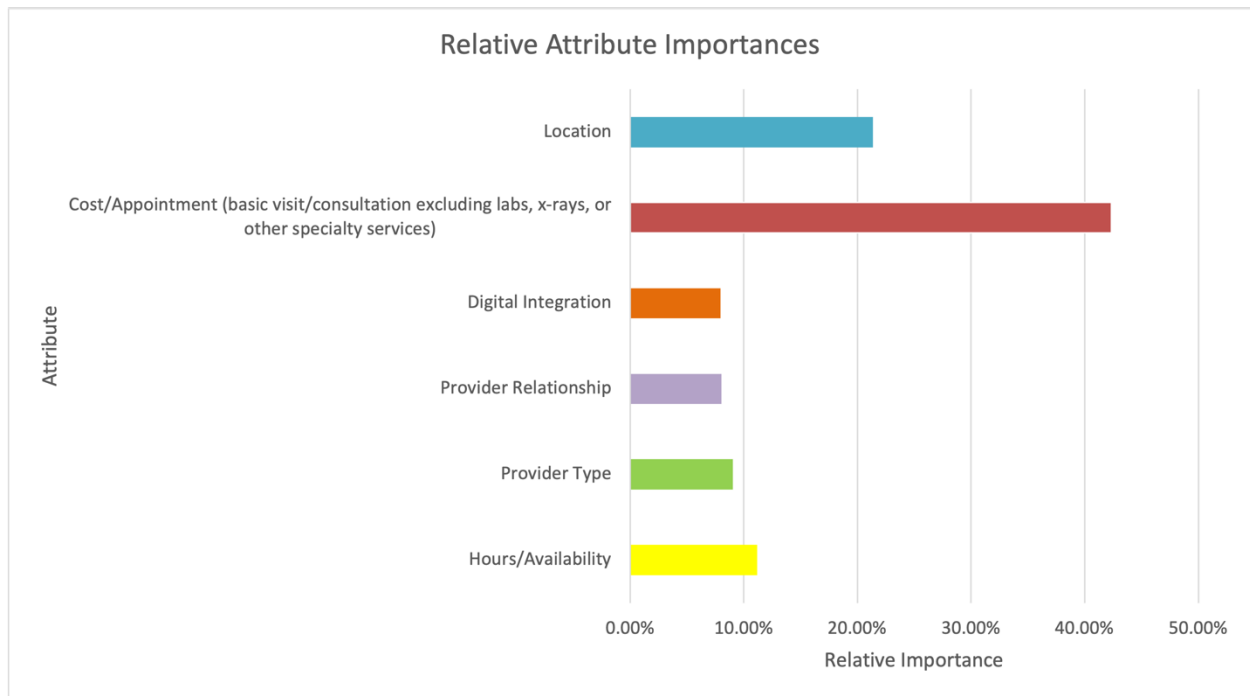


Figure One. Relative Attribute Importance of Student Healthcare Service Attributes (N=65)

Figure One demonstrates the relative importance of six healthcare service attributes based on CBC analysis results. Price emerged as the dominant factor (42.37%), followed by location

(21.36%) and hours/availability (11.2%). These quantitative findings clearly showed that factors such as convenience and cost outweighed provider-specific and digital integration attributes.

The following analysis will look at attribute level importances across 4 different segments:

Health Consciousness Score (HCS), Self-Autonomy (SA), Transportation Access, and Hometown.

Health Consciousness Score

There are three levels of health consciousness: low, medium, and high. A low score would indicate low awareness, alertness, and overall monitoring of one's health, and a high meaning the opposite.

For all three levels of HCS, respondents showed a similar hierarchy for the three most important attributes:

1. Price
 - a. Medium HCS being the most price sensitive (48.16%) when compared to high (41.15%) and low segments (40.15%).
2. Location
 - a. Low HCS respondents placing the highest utility on importance (25.78% when compared to High and Low.
3. Hours/Availability
 - a. Medium HCS respondents uniquely preferred 24/7 availability, however this was not a statistically significant difference.

For the following attributes, there were varying hierarchies:

High:

4. Provider Type (statistically significant, $p < 0.05$)

5. Provider Relationship
6. Digital Integration

Med:

4. Provider Type
5. Digital Integration
6. Provider Relationship

Low:

4. Provider Relationship (statistically significant, $p < 0.05$)
5. Provider Type
6. Digital Integration

These findings suggest that varying segments could find higher utility in different service offerings, once price, location, and cost have been accounted for.

Self- Autonomy Score

For all levels of SA Score, the attribute hierarchy remained the same for price, location, and hours/availability. It can be noted that there was inverse relationship with location importance. As self-autonomy decreased, location importance increased, with Low SA respondents placing higher importance on location (27.44%) compared to Medium SA respondents (19.73%). This could suggest that students with lower self-sufficiency rely slightly more on proximity and accessibility of care.

Medium SA respondents showed a statistically significant preference ($p < 0.05$) for provider relationship (same provider every visit was significantly more preferred than different provider

every visit). However, for the remaining attributes, while hierarchy of the remaining three attributes differed amongst segments, there were no statistical differences worth reporting.

Transportation Access

Respondents were asked if they had access to reliable transportation, and either answer “Yes” or “No”. For both answers of respondents, cost, location, and availability remained the three most important attributes. It can be noted that respondents who answered “No” showed statistically significant preference for Location (On campus health center preferred $p < 0.01$) and Provider relationship (same provider every visit, $p < 0.05$), in comparison with “Yes” who showed no statistical differences within the levels of these attributes. This could suggest that those without reliable transportation rely more on location convenience to account for their lack of transportation options.

Hometown

For hometown segmentation analysis participants were either “In-state”, “Out-of-State”, or “International”; however, there was only one international respondent, so she will not be included in the following analysis to avoid making inaccurate generalizations.

For both “In-State” and “Out-of-State” participants, price, location, hour/availability, and provider type make up the four most important attributes. Among the remaining two attributes, provider relationship showed a statistically significant different preference ($p < 0.05$) amongst “Out-of-State” participants for “Same provider every visit”, but not within “In-State”. This suggests that out-of-state students find more utility in connection with their provider.

Overall Healthcare Decision Factors:

In summary, these are the main healthcare preferences for the traditional undergraduate student, taking into consideration Health Consciousness Score, Self Autonomy Score, Transportation Access, and Hometown.

1. **Primary decision factors.** Price, location, and hours/availability dominated healthcare decisions, while digital integration tended to be the least influential factor.
2. **Provider type preferences.** While only reaching statistical significance for High HCS, the "Doctor" (MD) category showed the highest utility among provider types for all segments.
3. **Payment model preferences.** The traditional insurance-based payment model ("\$25 with insurance") was significantly preferred over the membership model ("\$0 with \$200/month membership") across all respondent segments.
4. **Service delivery preferences.** On-campus health centers were strongly and significantly preferred over telehealth options for Low SA, No transportation, and Out-Of-State respondents
5. **Digital integration preferences.** Basic online scheduling functionality demonstrated the highest utility among digital integration options for the overall sample but showed no statistical significance overall.
6. **Provider continuity preferences.** The "Same Provider Every Visit" option was significantly preferred over "Different Provider Every Visit" Low HCS, Med SA, No Transportation, Out-Of-State.

While all segments showed consistent preferences for lower prices and convenient locations, the statistical significance patterns revealed important nuances in secondary preferences. These

statistically significant differences ($p < 0.05$) highlight how healthcare service design might need to be tailored to address the specific needs of different student segments, particularly regarding provider consistency. Overall, these findings establish a clear understanding of undergraduate healthcare preferences, while the segmentation analyses show how these preferences could vary across different student populations.

Using the Market Simulator on Sawtooth Software, one can see the improved utility that arises when simply modifying provider continuity or hours/availability.

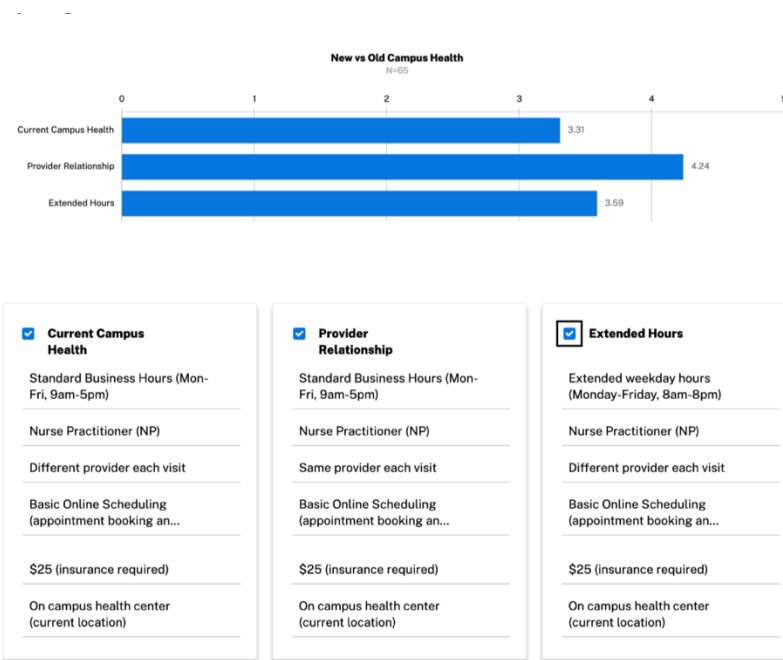


Figure Two. Sawtooth Market Simulator (N=65)

Figure Two shows that keeping cost, provider type, and digital integration constant, the service offerings with provider continuity showed the highest utility in comparison with extending weekday business hours. The same result was shown when extending hours to include weekend availability (Figure Two).

Qualitative and Quantitative

When integrating findings from the literature, qualitative focus groups, and choice-based conjoint study, key findings emerge. In the beginning of this report, Connection, Communication, and Convenience were started as three crucial “C’s” in healthcare service design. While these remain important aspects, for the traditional undergraduate student, this modified design thinking methodology found that Cost, Convenience, and Connection were the three most influential factors.

Cost

Financial considerations were emphasized strongly in the literature, qualitative findings, and quantitative evidence. It emerged as a focus group theme as well as the largest decision factor in the CBC survey. The significantly preferred insurance-based payment model across all segments reinforces focus group feedback expressing concern about healthcare affordability.

Convenience

Emerged as both a focus group theme “No time to be Sick” and “Starting from Scratch” and was supported by Location and Hours/Availability being the second and third most important attributes of healthcare service design. The significantly higher utility values for on-campus locations among students without reliable transportation further validated the qualitative insights about accessibility barriers.

Connection

The qualitative emphasis on consistent provider relationships and the desire for care “Beyond Quick fixes” is confirmed by the overall preference for same-provider continuity. The statistically significant preference for a continuous provider amongst Low HCS, Med SA, No Transportation, Out-Of-State respondents suggests that provider relationships potentially serve

different functions for different student populations, potentially providing stability for vulnerable or displaced students.

Conclusions and Recommendations

Conclusions

The findings from both qualitative and quantitative phases reveal a clear hierarchy of decision factors that can be translated into practical service design recommendations. The dominance of price, location, and hours/availability in the CBC analysis (collectively representing 75% of decision weight) suggests that these primary factors should form the foundation of any healthcare service improvement initiative. Meanwhile, the more variable preferences for provider type, provider relationships, and digital integration indicate opportunities for targeted service enhancements for specific student segments. This two-tiered approach to recommendations (universal improvements for primary attributes and targeted approaches for secondary attributes) offers a practical framework for service design that acknowledges both resource constraints and the need for some personalization.

Universal Improvements for Primary Attributes (About 75% of Decision Weight)

Price Transparency and Financial Accessibility (42.37% of decision weight).

- Prioritize availability and insurance coverage
- Be open and transparent about pricing structure
- Consider pricing tiers for students willing to pay more for better service offerings

Implementation strategy. Develop a clear pricing matrix that shows out-of-pocket costs for common services based on insurance status. This should be prominently displayed on the health center website and in printed materials. Consider implementing a transparent

sliding scale for uninsured students and exploring partnerships with insurance providers to expand coverage acceptance.

Location and Physical Accessibility (21.36% of decision weight).

- Invest in additional on-campus healthcare facilities, which were universally preferred across all segments
- Place health services in central campus locations
- Ensure ADA compliance and physical accessibility of all healthcare spaces

Implementation strategy. Conduct a campus accessibility audit to identify optimal locations for potential satellite health service stations. Consider temporary pop-up health services in high-traffic campus areas during peak illness seasons. Implement a free campus shuttle service connecting major residential areas to the health center.

Hours and Availability (11.2% of decision weight).

- Implement extended hours and weekend availability for on-campus health services
- Develop efficient appointment systems allowing both advance scheduling and same-day appointments
- Create cost-friendly transportation systems to healthcare service provider for students who do not have access to reliable transportation

Secondary Attributes: Targeted Approaches for Secondary Attributes (25% of decision weight)

This includes specifically catering to various segments (Low vs. High HCS, Out-of-State, etc.) and developing specialized services addressing the more variable preferences in their secondary attributes.

Provider Type and Qualifications (9.03% of decision weight).

- Ensure a mix of provider types with emphasis on MDs, which showed highest utility, especially for highly health-conscious individuals.

Provider Relationships (8.07% of decision weight).

- Create continuity-of-care systems specifically for:
 - Low Health-Conscious students who showed strongest preference for provider consistency
 - Out-of-state students who placed 20% more importance on consistent relationships
 - Medium Self-Autonomy students who valued provider relationships more than other SA groups

Digital Integration (7.98% of decision weight).

- Ensure availability basic online scheduling for all students
- Develop enhanced mobile applications specifically for:
 - Out-of-state students (who showed 4.6x higher utility for mobile apps)
 - Students without reliable transportation (34% higher importance)
 - High Health-Conscious students (highest utility for mobile apps)

Financial Implications

The recommendations vary in financial implications for implementation. Universal improvements to primary attributes may require significant initial investment, particularly for extending hours or adding locations. However, these investments may ultimately increase utilization rates and improve cost-effectiveness by reducing emergency care usage. Institutions should consider phased implementation starting with low-cost improvements to scheduling systems and price transparency, followed by targeted service enhancements for specific

segments, and finally considering larger capital investments such as additional facilities if utilization data supports such expansion.

Recommendations

The insights gathered from this study show that a hybrid approach to serving undergraduate healthcare needs is optimal. A one-size-fits-all strategy focused on broad improvements to pricing, on-campus locations, and extended hours would effectively address the primary concerns of all undergraduate segments. Improvements to these dominant attributes would likely yield the highest value creation for traditional undergraduate and benefit the widest population. For instance, adding another on-campus location, implementing provider continuity, or extending weekday and weekend hours would improve healthcare utility for virtually all undergraduates.

More specific, targeted approaches for the secondary attributes (provider type, relationships, and digital integration) should be tailored to specific student segments with unique needs, particularly out-of-state students, those with transportation limitations, and students with varying levels of health consciousness and self-autonomy. These specialized services could address the more variable preferences that showed in the segmentation analysis without requiring institution-wide implementation.

Overall, these findings contribute to the understanding of how undergraduate students make healthcare decisions and provide actionable insights for developing more responsive student healthcare services for this population. As students navigate the transition to healthcare independence, institutions have an opportunity to implement a combination of institution-wide improvements and targeted offerings that would effectively support this developmental stage of life.

Future Research Recommendations

While this study provides preliminary investigation and exploratory insights into how to better design healthcare service offerings for the traditional undergraduate student at a large public university, there are many directions this streamlined design thinking process and research methodology could be applied to further knowledge in other areas. Amongst these, there are two separate categories listed below:

1. **Population specific application:** New populations to explore and opportunities to gather insights about specific segments.
2. **Context Specific application:** This is broader applications, like taking into account policy/political context, technological advancements, or applying the process to other service industries.

Population Specific

- Part-time students: Part-time students often have jobs or other life circumstances that could create different scheduling constraints or unique healthcare needs or preferences that are not considered in this study.
- International students: These students may have language barriers and navigation issues in unfamiliar healthcare systems.
- Racial and Ethnic minorities: Racial barriers and specific ethnic group attributes of healthcare were not considered in this study. Further research could explore these additional barriers and how they impact healthcare service preferences.
- Age Group: Different age segments (elderly, young adults, middle aged) all exhibit different healthcare usage patterns and needs. This design thinking process could be applied to better understand these age segments.

- Chronic illness patients: These students may have more extreme healthcare needs and frequent healthcare service interactions, therefore requiring different service needs.
- Socioeconomic segmentation: People of varying socioeconomic classes likely vary on many factors (i.e. price sensitivity). A different study could explore how varying financial classes could impact healthcare preferences and decision-making processes.
- Academic discipline specific: This could identify whether students in different fields of study show different preferences or use-patterns in healthcare decision making.
- Class standing segmentation: The differences between the healthcare decision making process between upper and underclassmen could be explored to understand how preference and utilization patterns evolves throughout the college experience.

Context Specific

- Policy Impact: This could examine how policy changes in healthcare (I. The Affordable Care Act allowing students to remain on parental insurance until age 26) would impact student's healthcare needs and decision making.
- Mental Health or stress informed: This could specifically focus on how the streamlined DT approach could improve mental health service delivery, especially given the presence of anxiety and depression amongst the college population identified in the literature. This could also explore how stress levels influence healthcare service preference and utilization patterns.
- Cross Sector application: The whole modified DT process could be applied to other service industries (personal training, nutrition, hospitality, personal care services)

- Institutional Comparisons: Different colleges could be compared (public vs. private, small vs. large, community vs. 4-year university) to identify how this influences healthcare needs and preferences.

Overall, all these areas are potential opportunities to build and expand upon the preliminary and exploratory research conducted in this study. The findings can be used to develop a more robust and comprehensive understanding of how modified approaches to the design thinking method can be applied to better understand people’s preferences and needs in various service sectors and amongst various populations to improve overall utilization and satisfaction.

Student’s name	AI Use Disclosure
Alyssa Johansen	<ul style="list-style-type: none"> - Grammar and spelling verification was performed (Grammarly) - Claud.ai utilized to brainstorm a list of service attributes informed by literature review and anonymized focus group findings - Claude.ai for assistance in rewording sentences / finding synonyms, as well as ordering paragraphs for appropriate flow

Appendices

Appendix A: Focus Group Materials

A.1 Recruitment Materials

Focus Group Recruitment Flyer



Volunteers Wanted!

Undergraduate students needed for student honors thesis
research focus group

What you'll receive:

- Pizza during the session
- Focus group research experience
- Opportunity to contribute your perspective on undergraduate healthcare services

Jan 29th or 30th | 6pm
McClelland Park
4th Floor Boardroom

Agenda

- 90-minute group discussion with interactive activities
- Share your college healthcare experience

To be eligible:

- A full-time undergraduate student
- Between 18-24 years old
- Currently enrolled full time at the University of Arizona



Alyssa Johansen
Senior Honors Student

Scan to sign
up!



Questions?

Email ajohansen@arizona.edu

[Email/Club Announcement/Social Media Recruitment Templates](#)




“Hi everyone! A friend is conducting a focus group for her honors thesis project research and is looking for participants. If you’re interested, check out the flyer and link below!”

Confirmation Emails:

Hello!

Thank you so much for signing up to participate in my honors thesis focus group! Your time and insights will play a key role in shaping my research, and I truly appreciate your willingness to contribute.

Here are the details for the session:

-  Date: Wednesday, January 29th
-  Time: 6:00 PM – 7:30 PM (please arrive on time)
-  Location: McClelland Park 4th Floor Boardroom
- 50 N Park Ave, Tucson, AZ 85719

Pizza will be provided as a small token of my appreciation!

If you have any questions or need to update your availability, don’t hesitate to reach out. Additionally, I do have a few more open spots, so if you have a friend or a colleague you think would be interested in participating, please feel free to share this link.

Thank you again, and I look forward to seeing you there!

[Sign-up Form Template](#)

Thank you for your interest in participating in my undergraduate healthcare research!

We're looking for students to share their experiences in a 90-minute focus group discussion (free pizza provided!).

As a participant, you'll receive:

- Pizza dinner during the session
- Valuable focus group research experience
- Opportunity to contribute your perspective to an undergraduate honors thesis exploring student healthcare services

All discussions and information shared will be kept strictly confidential. Selected participants will be contacted via email by **January 27th** with session details.

Please complete the form below to sign up!

Are you currently enrolled as a full-time undergraduate student (12+ credits)? *

Yes

No

Are you between 18-24 years old? *

Yes

No

Full Name (First and Last Name) *

Short answer text

University Email *

Short answer text

Phone Number

Short answer text

Focus Group Date Selection

January 29th at 6pm

January 30th at 6pm

A.2 Focus Group Informed Consent

<https://arizona.box.com/s/rcfivrod4ihxpw8fiewtgaqlmzenqbou>

A.3 Participant Pre-Screen Questionnaire

Demographic Information

Thank you for participating in our focus group. Please complete the following demographic questionnaire. Your responses will remain confidential and will only be used for research purposes.

Age: _____

Hometown: _____

Expected Graduation:

Month: _____

Year: _____

Housing & Transportation
Residential Status:
On-campus housing
Off-campus housing

Do you have access to reliable transportation?
Yes
No
Identity

Gender Identity (select one that best describes you):
Woman
Man
Non-binary
Transgender
Other: _____
Prefer not to say

Your privacy is important to us. All responses will be kept confidential and analyzed in aggregate form only.
Date completed: _____

A.4 Focus Group Discussion Guide

Focus Group Discussion Guide: Undergraduate Healthcare Services

- 90-minute session
- 6-8 traditional undergraduate students

Pre-Discussion Social Time (20 minutes)

- Participants arrive and get settled, fill out consent/demographic form.
- Thank you. Introduction: Explain that this is a casual social time for food and introductions
 - **Introduction:** “Welcome and thank you for volunteering to take part in this focus group for my honors thesis project. You have been asked to participate because your point of view is important. I realize you are busy, but I appreciate your time.” [ADD PART FOR EXPLANATION OF TIME]
- Have participants eat dinner (pizza)
- Informal socializing and getting to know one another.
- The moderator circulates to introduce herself and help participants feel comfortable.
- Set up name tags prior to this time.

Facilitator’s welcome, introduction, and instructions to participants (10 mins)

Anonymity: As you know, today’s session will be recorded so that I can actively listen to your responses instead of taking notes. I would like to assure you that the discussion will be anonymous. The tapes will be kept safely in a secure box folder until they are transcribed word for word, and then they will be destroyed. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. Try to

answer and comment as accurately and truthfully as possible. I and the other focus group participants would appreciate it if you would refrain from discussing the comments of other group members outside the focus group. If there are any questions or discussions that you do not wish to answer or participate in, you do not have to do so; however, please try to answer them and be as involved as possible.

Ground rules: (In order to ensure everyone has the opportunity to participate, here are some guidelines for the session:) [explaining the ‘why’ for the rules]

- The most important rule is that only one person speaks at a time. There may be a temptation to jump in when someone is talking, but please wait until they have finished.
- There are no right or wrong answers.
- You do not have to speak in any particular order.
- When you do have something to say, please do so. There are many of you in the group, and it is important that I obtain each of your views and opinions.
- You do not have to agree with the views of other people in the group.
- Does anyone have any questions or concerns? (answers).
 - OK, let’s begin.

Warm-up and introductory question

- First, I’d like everyone to introduce themselves. Can you tell us your name, year in school, and where is your hometown, and one word to describe your experience with healthcare services as a college student,

(Go around the table and have each participant introduce themselves.)

- Move into a discussion about why those words were chosen.

Distribute Post Its and Colored Markers

Now, I would like you to take a few Posts It Notes and a pen. I’ll tell you what to do with them in a minute.

Guiding questions – part one – Current Healthcare Behaviors (15 mins)

Today, we’ll be discussing your experiences with healthcare services as undergraduate students. I am just interested in your honest opinions and preferences.

I’m going to ask you to use your imagination. Picture this scenario:

You’re not feeling well while at school. Maybe you have a sore throat, or you’re feeling anxious, or you twisted your ankle - whatever health concern comes to mind first. You decide you need to get some help. What are your thoughts? What is running through your mind?

Take a Post It note and write down the first thing that comes to your mind. It can be just one word or a few words. If you think of more than one thing, you can use multiple Post Its. Don’t overthink it - just write your immediate reactions.

(Give everyone three minutes to write)

Would anyone like to share their thoughts?

(Select someone who is willing to share one of their Post Its.)

Participant shares a word or phrase.

Tell us what you wrote down.

(As they read their Post It, ask them to put it on the poster board.)

Why did you think of that word (or phrase)?

Does someone else have one they would like to share?

(Select Participant)

Participant shares a word or phrase.

Tell us what you wrote down.

(As they read their Post It, ask them to put it on the black poster board. If it is similar to the first word or phrase, have them place it next to that word or phrase. If it is very different, place it far away from that word or phrase.)

Why did you think of that word?

Why did you place it near (or far away) from the first word?

(Select Participant)

Participant shares a word or phrase.

Tell us what you wrote down.

(As they read their Post It, ask them to put it on the black poster board. If it is similar to one of the words or phrases on the board, have them place it next to that word or phrase. If it is very different, place it far away from that word.)

Why did you think of that word?

Why did you place it near (or far away) from the first word?

(All the Post Its go on the board.)

Now, let's put all the Post It's on the board. If you have a similar word or phrase, put it near that Post It. If you have a very different word or phrase, place it in an empty space.

(As people add words, look to see if some should be combined and group them together. Similarly, separate different words.)

Discuss the groups of Post Its

DISCUSS

- Take a look at this board. What does it make you think of?

(Focus on the most popular item.)

(ID THE MOST POPULAR HEALTHCARE SERVICE or SERVICE DESCRIPTION.)

Many of you selected (ITEM GROUP 1). Does everyone like (ITEM GROUP 1)? Why do you like (ITEM GROUP 1)?

Who doesn't like (ITEM GROUP 1)? Why not?

(ID ANOTHER HEALTHCARE SERVICE or SERVICE. LOOK FOR A DIFFERENT GROUP)

Many of you selected (ITEM GROUP 2). Does everyone like (ITEM GROUP 2)? Why do you like (ITEM GROUP 2)?

Who doesn't like (ITEM GROUP 1)? Why not?

Guiding questions – part two – Open Discussion (10 minutes)

Pain Points

- What frustrates you most about getting healthcare as a student?
- What barriers prevent you from seeking care when you need it?
- What aspects of current healthcare services could be improved?

Existing Solutions:

- What resources do you use to find healthcare information?

Comparison Discussion

How do you choose between:

- Campus health services
- Local urgent care
- Telehealth services
- Primary care physicians
- Emergency rooms

What makes you choose one option over another?

What would make you switch from your current healthcare provider?

What keeps you using your current healthcare services?

Guiding questions – part three –Service Model Discussion (20 minutes)

Now, I want your opinion about three different healthcare service models.

Present the basic concept of 3 service models:

1. Campus Health Services
2. Telehealth-First Model
3. Concierge Service

For each concept:

- What are your initial thoughts?
- What appeals to you most about the service? Why do you say that?
- What concerns you? Why do you say that?
- How would this fit into your life as a student? Why do you say that?

Go around the table and get everyone to comment.

- What would make this service more appealing to you?
 - Any other ideas?
- If I told you this was my healthcare service model, what would you think about me? Why?

Now, let's take a look at another service.
(REPEAT QUESTIONS)

(PRESENT ALL 3 SERVICES NEXT TO EACH OTHER)

Look at these three healthcare service models.

Which do you prefer? Why?

Campus Health Centers
Telehealth
Concierge Services

Total Votes: Make sure no one votes twice.

Guiding questions – part four–Service Features Prioritization (20 minutes)

Setup Materials

- Three different colored notecards for each participant
- Piece of paper and pen for each participant

Red = Must Have (Essential feature)

Yellow = Should Have (Important but not critical)

Green = Could Have (Nice but not necessary)

A large board is divided into three columns labeled "Must Have | Should Have | Could Have."

Feature Generation (5 minutes)

"Write as many features as you can think of. Consider things like:

[OR PROVIDE SET LIST?]

How would you access care?

What services would be available?

How would you interact with the service?

What would make it easy to use?

Is the service affordable?

Individual Prioritization (3 minutes)

"Now look at all your features. Sort them into three piles using your colored cards:

Red pile: Must Have - essential.

Yellow pile: Should Have - important but not critical.

Green pile: Could Have - would be nice but not essential."

May change colors to not associate with bad/good choices

Group Sharing & Discussion (10 minutes)

"One at a time, share your Must Have features first. Place them on the board and tell us:

What's the feature?

Why is it a must-have for you?

What problem does it solve?"

[After Must Haves are shared, move to Should Haves, then Could Haves]

Conclusion (5 mins)

Concluding questions

- Of everything we've discussed, what's most important to you in healthcare services?
- What would make the biggest difference in your healthcare experience?
- What final advice do you have for improving student healthcare services?

Thank you for participating. This has been a very successful discussion. Your opinions will be very valuable to our study. We hope you have found the discussion interesting. If there is anything you are unhappy with or wish to complain about, please contact me later. Any comments featured in this report will be anonymous. Before you leave, please hand in your completed personal details questionnaire.

Materials Needed

Administrative:

- Consent forms (multiple copies)
- Demographic questionnaires (multiple copies)
- Sign-in sheet

Refreshments:

- Pizza (pickup before start)
- Plates, napkins
- Water bottles

Recording & Documentation:

- Audio recording equipment
- Yellow Notepad for facilitator notes
- Laptop for AI copilot/Zoom recording.

Participant Materials:

- Tent cards (white cards + black Sharpies)
- Sticky notes (multiple colors)
- Colored notecards (Red, Yellow, and Green for the prioritization exercise)
- Paper for participants
- Pens/markers for participants

Display Materials:

- Large paper/flip chart
- Easel
- Tape
- Markers for facilitator
- Service concept description handouts (printed)
- Scenario cards (printed)

A.5 Focus Group Materials/Artifacts

Healthcare Service Scenario Cards

- “You're not feeling well while at school. Maybe you have a sore throat, or you're feeling anxious, or you twisted your ankle - whatever health concern comes to mind first. You decide you need to get some help. What are your thoughts? What is running through your mind?”

Healthcare Service Description Cards

1. Campus Health Services

- An on-campus clinic providing basic medical care, mental health services, and preventive care.
 - Walk-in and scheduled medical care.
 - Basic laboratory services
 - Sexual health resources
 - Immunizations

2. Telehealth Model:

- A digital healthcare service focused on 24/7 virtual consultations through video calls and messaging.
 - Mobile app for scheduling and health tracking
 - Digital prescription management
 - Remote mental health counseling
 - Virtual wellness coaching
 - Secure messaging with providers
 - Optional in-person care referrals

3. Concierge Service

- A membership-based healthcare model offering dedicated primary care, same-day appointments, and personalized attention. Includes direct provider access and care coordination with extended appointment times.
 - Dedicated primary care physician.
 - Same-day appointments
 - Extended consultation times
 - Direct provider communication
 - Preventive care focus
 - House calls/dorm visits

A.5 Thematic Analysis Coding Table

Theme	CODE	Definition
ACCESS	Scheduling	References to making appointments, availability of services, and scheduling processes
	Location	Comments about physical location of services and proximity to users
	Transportation	Discussion of transportation methods and challenges in reaching healthcare services
	Wait Times	References to service delays, waiting room time, and speed of access
QUALITY	Provider Expertise	Comments about healthcare provider qualifications and expertise
	Care Effectiveness	References to treatment outcomes and effectiveness of care
	Patient Satisfaction	Expressions of satisfaction or dissatisfaction with services
	Continuity of Care	Discussion of ongoing care relationships and consistency
COST	Insurance Coverage	References to insurance coverage and related issues
	Out-of-Pocket Expenses	Discussion of direct costs to patients
	Affordability	Comments about ability to pay for services
	Financial Barriers	References to cost as a barrier to accessing care
COMMUNICATION	Provider Communication	References to interactions with healthcare providers
	Information Clarity	Comments about clarity of medical information and instructions
	Digital Communication	Discussion of digital communication methods
	Follow-up Communication	References to post-visit communication
SERVICES	Medical Services	References to specific medical services and procedures
	Mental Health	Discussion of mental health services
	Preventive Care	References to preventive healthcare services
	Specialized Care	Comments about specialized medical services
STUDENT-SPECIFIC CONCERNS	Academic Impact	References to healthcare affecting academic performance
	Campus Integration	Discussion of integration with campus services
	First-Time Navigation	Comments about learning to navigate healthcare independently
	Student Life Compatibility	References to balancing healthcare with student life
HEALTHCARE PREFERENCES	Care Model Preferences	Expressed preferences for different care delivery models
	Provider Preferences	Preferences for different types of healthcare providers
	Facility Preferences	Preferences for different healthcare facilities
	Service Delivery Preferences	Preferences for how care is delivered

A.6 Mural Digital Whiteboarding Session



Appendix B: Survey Materials

B.1 Survey Recruitment

Email Templates (to Faculty)

Hello [Professor],

I hope you are doing well and looking forward to the holiday break!

My name is Alyssa Johansen, and I am an undergraduate honors student doing my honors thesis on using the design thinking method to better design healthcare services for undergraduate students under the supervision of Kathleen Kennedy.

I am writing to request your assistance in recruiting participants for my research study by:

1. Posting a survey link in your D2L course platform
2. Offering a small amount of extra credit to students who complete the survey.

As an additional incentive, participants will be entered into a raffle for one of two \$25 Amazon gift cards. The study targets traditional undergraduate students (ages 18-24) and aims to understand their healthcare experiences and needs, as well as gather feedback on descriptive prototypes.

If you're willing to help, please let me know! I will provide:

- A brief announcement text for D2L
- The survey link (once developed in the Spring semester)
- Documentation to verify student completion for extra credit.

Please let me know if you would be willing to support this preliminary research effort or if you have any questions. Your assistance would be very helpful in helping reach my target sample size of 100 undergraduate participants.

Thank you for your time and consideration.

Best,

Alyssa

D2L Announcement:

Fellow Student Needs Your Help! (+ Extra Credit)]

Hi everyone!

My name is Alyssa Johansen, and I am a graduating senior working on completing my honors thesis. I'm researching how to improve healthcare services for undergraduate students, and I need your input!

What you'll get:

- extra credit points for this course
- a chance to win a \$50 Amazon gift card

The survey takes about 10-15 minutes to complete.

To receive your extra credit:

- Complete the survey: <https://HonorsThesisCBC.sawtoothsoftware.com>
 - Make sure to hit "Yes" for course credit and enter your email address and course number when prompted (i.e. RCSC114)

Deadline: **SUNDAY, APRIL 6th, 11:59 pm**

Thank you in advance for your time and help, it is greatly appreciated!!

If you have any questions, feel free to reach out to me at ajohansen@arizona.edu

Thank you!
Alyssa Johansen

B.2 Online Survey Components

The 13 items from the Self-Awareness (SA) and Capacity for Managing New Situations (CMNS) subscales of the Autonomy-Connectedness Scale (Bekker & van Assen, 2006) are:

Self-Awareness (7 items):

1. I often don't know what my opinion is [-]
2. I have outspoken opinions on most subjects [-]
3. I often find it difficult to determine what I really want
4. Usually, it is very clear to me what I like most [-]
5. If I disagree with others, I make that very plain [-]
6. If I am asked what I want, I mostly know the answer immediately [-]
7. Hearing the opinions of other people often makes me change my mind

Capacity for Managing New Situations (6 items):

8. I quickly feel at ease in new situations
9. I easily come to grips with a new problem on my own
10. I need a lot of time to get accustomed to a new environment [-]
11. I am a very adventurous person
12. If it were up to me, I would spend most of my time in familiar surroundings [-]
13. I find it hard to start new activities on my own [-]

Note: Items marked with [-] are negatively worded and should be reverse-scored.

Health Consciousness Awareness Scale

1. I reflect about my health a lot.
2. I'm very self-conscious about my health.
3. I'm generally attentive to my inner feelings about my health.
4. I'm constantly examining my health.
5. I'm alert to changes in my health.
6. I'm usually aware of my health.
7. I'm aware of the state of my health as I go through the day
8. I notice how I feel physically as I go through the day.
9. I'm very involved with my health.

CBC Experimental Design details

Imagine you're experiencing health symptoms (like a persistent sore throat, unusual fatigue, anxiety, or an injury) and decide you need to consult a healthcare provider.

You have several healthcare service options available to you. Each option has different features related to hours, provider types, location, and other factors. On the following screens, you'll see sets of healthcare service options.

For each set, please select the option you would most likely choose if you were seeking healthcare while at university. If none of the options appeal to you, you can select "None of these."

Consider your own preferences, schedule, and how you typically make healthcare decisions when choosing between the options presented.

1. Hours/Availability

- Standard business hours (Monday-Friday, 9am-5pm)
- Extended weekday hours (Monday-Friday, 8am-8pm)
- Extended hours plus weekend availability (Everyday 8am-8pm)
- 24/7 availability (combination of in-person and virtual care)

2. Provider Type

- Nurse Practitioner
- Doctor
- Physician Assistant

3. Provider Relationship

- Different provider each visit
- Same Provider Every Visit

4. Digital Integration

- Basic online scheduling (appointment booking and cancellation only)
- Health portal (scheduling, secure messaging, view test results)
- Comprehensive digital system (portal plus mobile app with symptom checker, health records, prescription refills, and appointment reminders)
- No digital integration, only call ins and walk-in visits

5. Out-of-pocket cost per visit (basic appointment/consultation excluding labs, x rays, or other specialty services)

- No charge per visit with \$200/month membership fee (unlimited visits allowed)
- \$75/ appointment (no insurance required)
- \$25/ appointment + (with insurance coverage)
- \$125/ appointment (no insurance required)

6. Location/Accessibility

- **On campus health center**

- **Off-campus** (1-5 mile from university)
- **Off-campus** (5+ miles from university)
- **Completely Online Telehealth**

Attributes and Levels					
1	Cost/Appointment	\$0 (\$200/month membership)	\$75 (no insurance required)	\$25 (insurance required)	\$125
2	Location	On campus health center	Off-campus (1-5 miles from university)	Off campus (5+ miles from university)	Completely online telehealth service
3	Hours	Standard business hours (Monday-Friday, 9am-5pm)	Extended weekday hours (Monday-Friday, 8am-8pm)	Extended hours plus weekend availability (Everyday 8am-8pm)	24/7 availability
4	Provider Type	Nurse Practitioner (NP)	Doctor (MD)	Physician Assitant (PA)	
5	Provider Relationship	Same Provider Every Visit	Different Provider Every Visit		
6	Digital Integration	Basic online scheduling (appointment booking and cancellation only)	Online Health portal (scheduling, secure messaging, view test results)	Comprehensive digital system (portal plus mobile app with symptom checker, health records, prescription refills, and appointment reminders)	No digital integration, only call ins and walk-in visits

B.3 Survey Results

CBC Data Outputs (Anonymized)

Hierarchical Bayes Summary

CBC/HB Report Results Summary		
Study Name	CBCTHESISURVEYONE	
Exercise Name	CBC	
Number of Respondents	65	
Average Utilities (Zero-Centered Diffs)	Average Utilities	Standard Deviation
Standard Business Hours (Mon-Fri, 9am-5pm)	-17.09335	25.65539
Extended weekday hours (Monday-Friday, 8am-8pm)	-6.05848	24.10305
Extended hours plus weekend availability (Everyday 8am-8pm)	12.07405	25.03831
24/7 availability	11.07778	31.18535
Nurse Practitioner (NP)	-12.69027	22.74811
Doctor (MD)	19.75094	17.98873
Physician Assistant (PA)	-7.06067	22.86601
Different provider each visit	-18.70477	25.50959
Same provider each visit	18.70477	25.50959
Basic Online Scheduling (appointment booking and cancellation)	3.91279	22.24760
Online health portal (scheduling, secure messaging, view test results)	-3.23872	20.01244
Mobile app with messaging, prescription management, appointment reminders	3.68283	20.08211
No digital integration (call-ins and walk-ins only)	-4.35690	20.05737
\$0 (\$200/month membership)	-85.04802	61.79839
\$75 (no insurance required)	16.49389	25.79764
\$25 (insurance required)	134.21651	64.18902
\$125 (insurance required)	-65.66237	56.07879
On campus health center (current location)	44.22742	49.59314
Off-campus (1-5 mile from university)	9.19857	34.22766
Off-campus (5+ miles from university)	-2.55933	44.30938
Completely online telehealth service	-50.86667	33.39126
NONE	-105.17584	139.76253
Average Importances	Average Importances	Standard Deviation
Hours/Availability	11.19813	4.83157
Provider Type	9.03225	4.12295
Provider Relationship	8.06546	6.76150
Digital Integration	7.97644	3.88658
Cost/Appointment (basic visit/consultation excluding labs, x-rays)	42.36887	14.52347
Location	21.35885	8.99459

CBC Counts Analysis

Hours/Availability	
	Total
Total Respondents	65
Standard Business Hours (Mon-Fri, 9am-5pm)	0.377
Extended weekday hours (Monday-Friday, 8am-8pm)	0.421
Extended hours plus weekend availability (Everyday 8am-8pm)	0.433
24/7 availability	0.453
Within Att. Chi-Square	2.358
D.F.	3
Significance	not sig

Provider Type		
		Total
	Total Respondents	65
	Nurse Practitioner (NP)	0.412
	Doctor (MD)	0.477
	Physician Assistant (PA)	0.376
Within Att. Chi-Square		5.372
D.F.		2
Significance		not sig
Provider Relationship		
		Total
	Total Respondents	65
	Different provider each visit	0.377
	Same provider each visit	0.464
Within Att. Chi-Square		5.897
D.F.		1
Significance		p < .05
Digital Integration		
		Total
	Total Respondents	65
	Online Scheduling (appointment booking and cancellation only)	0.448
	Health portal (scheduling, secure messaging, view test results)	0.412
	Medical record management, appointment scheduling, and health records	0.421
	No digital integration (call-ins and walk-ins only)	0.402
Within Att. Chi-Square		0.889
D.F.		3
Significance		not sig
Cost/Appointment (basic visit/consultation excluding labs, x-rays, or other specialty services)		
		Total
	Total Respondents	65
	\$0 (\$200/month membership)	0.248
	\$75 (no insurance required)	0.432
	\$25 (insurance required)	0.718
	\$125	0.287
Within Att. Chi-Square		104.851
D.F.		3
Significance		p < .01
Location		
		Total
	Total Respondents	65
	On campus health center (current location)	0.529
	Off-campus (1-5 mile from university)	0.415
	Off-campus (5+ miles from university)	0.387
	Completely online telehealth service	0.350
Within Att. Chi-Square		13.821
D.F.		3
Significance		p < .01

Part Worth Utility Chart

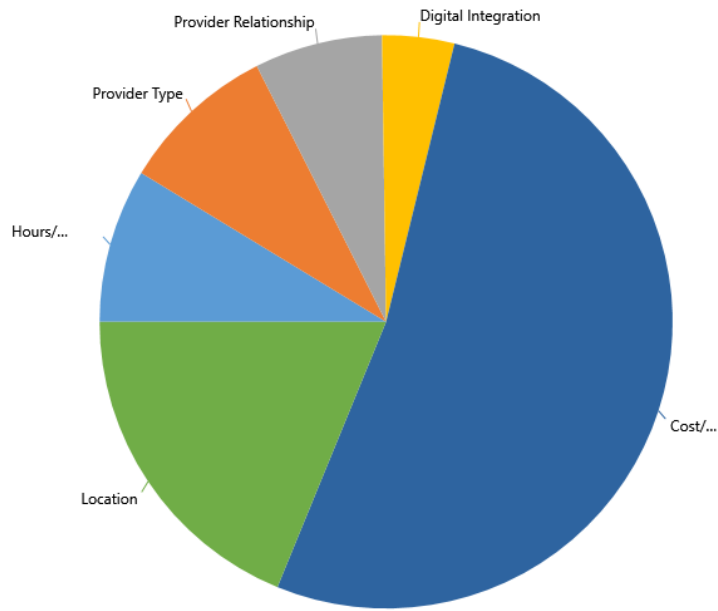
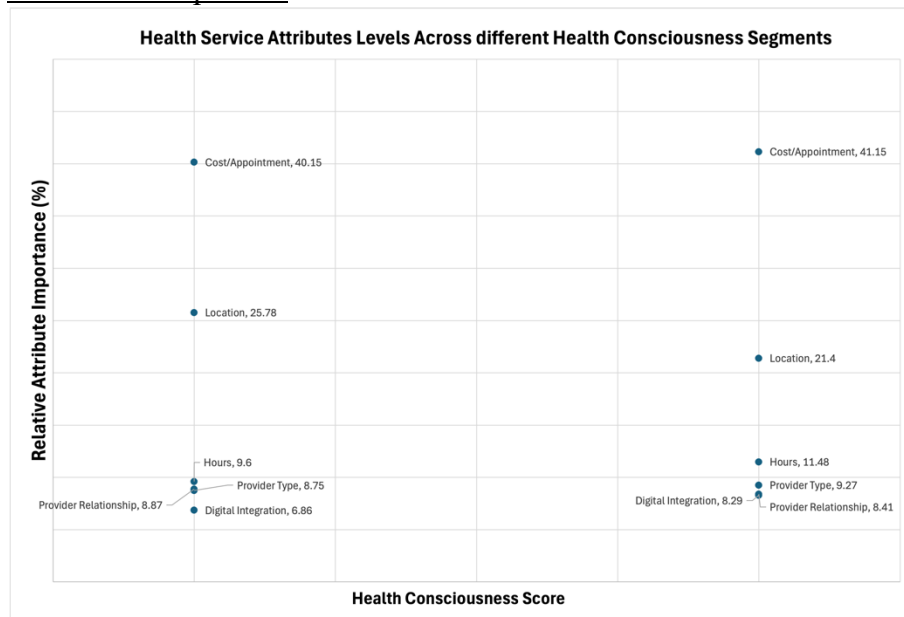


Chart for Comparison



Response Rate Information

- Total Responses= 75
- Completion Rate = 65

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