Abstract:

Telehealth aims to overcome barriers to allow easier access to contraceptives among individuals. Access to contraceptives has remained difficult for many individuals due to numerous factors such as time, cost, ongoing legislation and policies, etc. The emergence of telehealth, however, aimed to make contraceptives more accessible. The growing use of telehealth brings many concerns as to how telehealth services can provide reliable results and protect sensitive personal data. This study focuses on assistance on access to birth control provided by telehealth organizations. A total of 8 different telehealth providers were studied in this study, assessing the privacy, policy, accessibility, & accuracy. (results) + (1-2 sentence conclusion)

\section{Background}

more exciting topic or pull the reader in first

The integration of digital technology has both positively and negatively impacted aspects of our daily lives particularly in the healthcare field. The emerging technologies such as artificial intelligence, telehealth, and machine learning have integrated with the healthcare industry thus creating digital health \cite{[5S]} \cite{[6S]}. Digital health holds a promising future for healthcare, and was even adopted by the World Health Organization (WHO) in 2020. WHO's strategic plan includes a vision for universal and equitable access to high quality health services through digital health, which includes the introduction of telehealth \cite{[6S]}.

Telehealth is a broad term encompassing all remote health related services, while telemedicine refers specifically to clinical services provided through technology either in real time or asynchronously \cite{[4S]}. Before the COVID-19 pandemic, the use of telehealth was low and still complex due to complications in billing requirements and other regulations \cite{[18S]}. During the COVID-19 pandemic, however, use of telehealth was critical, as it reduced transmission of SARS-CoV-2 while ensuring continued access to healthcare. Even with the virtual care limitations of telehealth, it proved to be a highly valuable resource in this context. This period produced an opportunity for many telehealth barriers to be upended, a process which included the improvement of contraceptive care services \cite{[3S]}.

Birth control, also known as contraception, is a method of pregnancy prevention offered in many different forms. These include oral contraceptives (birth control pills), condoms,

vaginal rings, intrauterine devices (IUDs), and patches \cite{[1S],[2S]}. Hormonal contraceptives, such as oral contraceptives, patches, and vaginal contraceptive rings, require a prescription from a health care provider according to the U.S. Food and Drug Administration (FDA) \cite{[9S]}. Other forms require medical assistance (i.e., sterilization surgery, I.U.D (intrauterine device). or I.U.S.), or no prescription at all (i.e., sponge with spermicide and condoms) \cite{[9S]}. From 2015-17 the CDC reported that approximately 64.9\% of females aged 15 to 49 use some form of contraception \cite{[33S]}. Among all ages, the most common form of birth control is female sterilization, an option utilized by 18.1\% of all females \cite{[9E]}. Sterilization is closely followed in popularity by the oral pill, used by 14.0\%, long-acting reversible contraceptives including injections, implants, and IUDs used by 10.4\%, and male condoms used by 8.4\% \cite{[9E]}.

Despite the many forms of contraception being available, there are many barriers in accessing contraception. These barriers were especially heightened during the COVID-19 pandemic, putting many at risk for unwanted or unintended pregnancies \cite{[17S],[28S]}. Those among low-income households and/or minority groups are often unable to afford contraception \cite{[29S]}. This makes them statistically five times more likely than an individual in a higher income bracket to have unintended pregnancy \cite{[19S]}. Consequently, many who are classified as low-income are uninsured and therefore more likely to purchase contraception that does not require a prescription \cite{[19S]}. This presents a potential health risk, as methods of birth control that are acceptable for use vary based on individual medical history \cite{[34S]}. Publicly funded programs such as Medicaid and Title X do offer support family planning services for those unable to afford contraception, however they are unable to bridge the gap fully due to under-funding \cite{[19S]}. Under Medicaid, individuals are offered a mandatory family planning service that is administered by the federal and state government \cite{[41S]}. Medicaid outlines minimum federal guidelines that state programs are to follow, however there is no specificity on what services must be included\cite{[42S]}. For example, states may employ utilization controls to determine the range of family planning services available \cite{[42S]}. This leaves room for limitations on contraceptive access. Title X is a federally funded program that provides a comprehensive family planning service as well as preventative health services \cite{[43S]}. Title X funds many health centers that provide family planning services and preventative health for low income or uninsured individuals \cite{[44S]}. However, Title X clinics in rural areas face limited access to contraceptives displaying geographical disparities \cite{[45S]}. In addition, in 2019 the Trump administration set a regulation that impacted clinics that provided abortion services, including referrals, significantly decreasing the number of clients served \cite{[46S]}. Despite strong efforts to

provide access to low income and uninsured individuals, programs like Medicaid and Title X are not able to remove all barriers to allow accessible access to contraceptives to all. Lastly, for several decades there has been a history of racial and ethnic disparities in women's health\cite{[20S]}. With 4 in 5 pregnancy related deaths being preventable in the U.S. \cite{[35S]}, a wider accessibility to contraception is important because a wider access can improve health \cite{[36S]}.

These disparities have led to an increased patient use of telehealth and/or online birth control providers to obtain contraceptives. Telehealth service provides convenience for consumers to access contraceptives, and direct to consumer advertisements (DTCA) have been used to educate and reach more consumers. The direct-to-consumer advertising (DTCA) methods of contraceptives have been critiqued by scholars due to its risk of misleading consumers. \cite{[30S]} Information on contraceptives being spread through advertisements, particularly on social media has presenting a rising concern \cite{[10S]} \cite{[31S],[32S]}. The development of contraceptive products has been guided by marketing decisions and product perceptions rather than scientific innovations \cite{[10S]}. In advertisements, risks and potential side effects are written in smaller texts or at the end of an advertisement in hopes of minimizing customers' aversion to potential drawbacks \cite{[11S]}. This raises questions regarding the ethics of online birth control prescription and provision. Are online providers adequately considering the risks present in birth control use when recommending products to consumers? Further, do these providers fully ensure the privacy of their patients? Finally, are these sites more accessible to patients than in-person consultation? If so, what are the risks to patient safety and security of their medical and personal information?

Acknowledging the current state and political climate of female reproductive health, we hope to aid the development of contraceptive access by offering an examination of the current state of telehealth providers. We intend to enable the provision of accessible and convenient services for all.

The following sections include a brief overview of the legislative environment regarding contraception in the United States, our experimental design for interacting with different telehealth providers that offer contraception, a brief explanation of different variables we found were important in telehealth services (quality, accuracy, privacy, accessibility), an analysis of our findings, and a conclusion with reflections as well as potential for future works.

\section{Policy Landscape}

Swan (2021) finds that U.S. policy can have a substantial impact on access to contraception \cite{[18E]}. While this brief review cannot address every individual provision covered by Swan or every policy enacted thereafter, a few developments relevant to Telehealth contraceptive provision are outlined in the section below.

While the Dobbs v. Jackson decision, which overturned Roe v. Wade in 2022, directly concerns abortion rights, the result of this landmark ruling has altered the landscape of contraception policy in the United States. The Court's majority opinion stated that the Dobbs decision does not "cast doubt on precedents that do not concern abortion." \cite{[9E]}. However, Justice Thomas argued in his concurring opinion that in future cases the Court should reconsider precedent that relied on the same principles as Roe \cite{[12E]}. This includes Griswold v. Connecticut, the Court's 1965 landmark decision that recognized the right of married people to obtain contraceptives. Justice Thomas' concurring opinion suggested the Court should utilize the precedent set by Dobbs to overturn those decisions, potentially putting continued access to contraception at risk \cite{[9E]}. In the hypothetical situations that individual states or federal entities were to pass a ban on contraception, there would be an impact on the functioning of online birth control providers, though the nature of this impact is currently unclear\cite{[9E]}.

Some recent legislation, having gone into effect after the Dobbs decision, has made access to certain forms of contraception more complex \cite{[5E]}. While the legislation itself does not challenge access to conventional forms of birth control, such as the oral pill contraceptive or patch, the way in which abortion is defined has in some cases been interpreted as limiting access to Emergency Contraceptives (ECs). These include the "morning after" pill and IUDs \cite{[5E]}. Medical professionals have noted that oral ECs can only prevent or inhibit ovulation, while the copper IUD (intrauterine device) prevents fertilization by affecting sperm viability and function \cite{[3E],[8E],[15E][16E]}. There is no peer-reviewed, scientific evidence that suggests ECs affect implantation or an established pregnancy \cite{[8E]}, yet as many as 73\% of individuals believe these methods to be abortifacients, citing religious objections \cite{[3E],[4E]}. Thus, while leading medical organizations including the American College of Obstetricians and Gynecologists and Mayo Clinic, define pregnancy to begin at the implantation of a fertilized egg, several abortion bans, such as those in Missouri and Tennessee, define pregnancy as beginning at fertilization \cite{[13E][14E]}. This legislation also defines "fetus" and "unborn children" as

living humans from the moment of fertilization until birth \cite{[4E],[5E][13E][14E]}. Access to emergency contraception through OB/GYNs has been inconsistent because of this legislative language \cite{[5E]}. Thus, while no other states have currently experienced this complication, access to birth control on the state level is a rapidly changing landscape. Scholars have already found that E.C (Emergency Contraceptive) (Emergency Contraceptive). prescriptions rates have fallen in states with strict abortion bans \cite{[17E]}. This further impacts the functioning of online birth control providers who offer ECs as part of their services; for example, as state restrictions increase, telemedicine may provide an avenue for increased and less restricted access.

Yet another area of policy that affects access to birth control is the coverage of contraception by health insurance plans. The Affordable Care Act (ACA) of 2010 requires that all health insurance plans cover 18 forms of "female controlled" contraception including female sterilization \cite{[1E],[10E],[11E]}. These federal mandates also prohibit cost-sharing, requiring that birth control be available without any out-of-pocket cost to the patient (ex. co-pays, deductibles) \cite{[1E]}. Some individual states have altered their requirements to match the federal guarantees. Others have gone even further by requiring coverage for contraceptive methods that are available over the counter without requiring the patient to first obtain a prescription \cite{[1E],[10E],[11E]}.

Despite these guarantees, there are several factors that complicate the efficacy of these regulations in practice. Despite mandates, 41\% of females at reproductive age do not know that most insurance plans are required to pay the full cost of their birth control, and thus many privately insured individuals continue to pay out-of-pocket for contraceptives \cite{[7E],[2E]}. While 70\% of females with private insurance say their insurance covered the full cost of their most recent birth control method, 25\% say they paid at least part of the out-of-pocket cost \cite{[7E]}. Further, for uninsured women, financial strain presents a challenge to accessibility, as one in five uninsured females of reproductive age say they had to stop using a contraceptive method because they could not afford it \cite{[7E]}. For low-income women, 17\% said cost was the leading reason they were not using their preferred method of contraception\cite{[2E]}.

Additionally, some states with coverage mandates have passed legislation allowing employers to opt out of covering contraceptives in their insurance plans \cite{[1E],[11E]}. The 2014 Supreme Court ruling on Burwell v. Hobby Lobby Stores established that for-

profit businesses with religious objections to birth control are exempt from the ACA's coverage mandate \cite{[18E]}. Many states have since developed “conscience clauses.” These clauses are guidelines included within coverage mandates that exempt individuals or groups with religious or moral objections to contraception from the requirement to cover birth control with company/entity insurance \cite{[1E],[6E]}. In addition to conscience clauses identifying which entities are entitled to claim an exemption by defining the grounds of exemption, they also define measures that exempt individuals or groups can take to mitigate the adverse effects of non-provision to those who need contraception \cite{[1E],[11E]}. Some states’ conscience clauses are broad while others are specific. Broader language applies to a greater number of entities, therefore leaving more women without coverage as more companies claim exemption \cite{[6E],[11E]}. See Figure \ref{fig:policy1} for specifics on which states have coverage mandates, which of these states have conscience clauses, and further classifications of how expansive these clauses are in their allowance of non-coverage \cite{[1E],[6E],[11E]}.

Exemptions have expanded further on the federal level as the Trump administration expanded regulations to define nearly any moral or religious objection by an employer to be exempt from the coverage mandate. This culminated in the 2020 Supreme Court case, Little Sisters of the Poor Saints Peter and Paul Home v. Pennsylvania, which held that the religious and moral exemptions were lawful \cite{[18E]}. These exemptions impact contraceptive access due to birth control being more expensive for those whose employers have obtained an exemption from the mandate \cite{[18E]}. This may have an impact on use of Telehealth providers, particularly those who market themselves as being affordable for those without insurance.

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Overall, the inconsistent and ineffective nature of contraceptive coverage presents a barrier to access for those seeking birth control; this may affect their ability to obtain contraception through their doctor, pushing them to utilize a Telehealth provider instead.

With the current policy landscape in mind, we approached this research with the primary intent of assessing current barriers to contraceptive access through Telemedicine providers. Given current barriers to access through other means, the potential for increased access through online providers is only feasible should these companies abide by metrics of responsibility, transparency, and accessibility; we seek to define and assess these categories through our study.

\section{Experimental Design}

Our choice of websites to include in this study was based on an initial test of each popularly suggested telehealth provider by multiple news outlets(cite). We then narrowed the sites down to those in which we could adequately analyze through our sign-up event framework. A sign-up event relies on the framework established in our overarching research project, Use \& Abuse of Personal Information(U\&A). The U\&A team has built a sign-up engine and mock user database generation tool, which in tandem use United States official government records such as census data to create IDs. All traceable information in these IDs mimics reality, but does not contain any real individual's personal information in order to protect real people and companies from accidental identity impersonation. The development and further experimental use of this software is documented in the associated papers\cite{[5L],[6L]}.

We found several unique barriers to our analysis of such websites as well as variations in the recommendation processes that further complicated our ability to collect recommendation results. For example, several websites [list sites] required the user to submit a government-issued ID alongside a photo of themselves in order to verify their identity. While each site that asked for this information cited a need to abide by Telehealth laws through identity verification, no further information was given to the user regarding the specific regulation that justifies such requirements. Further, during our inquiry into Telehealth legislation, we were able to find evidence that prescription of controlled substances is federally required to include a Telehealth visit in order to verify identity, but we did not find federal provisions for the requirement of an ID. Despite the inconsistency of this requirement and the questions raised as to the need for this kind of information, we were unable to fully sign up for sites that required a photo ID. These sites were XXX and are still included in other aspects of the study, just not in the results dependent portion [list sites].

Moving forward, we chose to sign up for sites that provided birth control recommendations at the end of a questionnaire [list sites]. These sites included XXX (cite). Our intention was to test whether online providers adequately considered major health risks when recommending birth control. In order to determine which health conditions would pose a high risk, we collected evidence from medical journals and interviewed Dr. XXX, an OB/GYN Professor at Carillion Medical School. The conditions categorized as making an

individual at high risk or having their health negatively impacted due to the use of birth control are as follows: aura migraines, blood clot conditions, high blood pressure, pre-menstrual dysphoric disorder, and polycystic ovary syndrome. We will now describe the definitions, risks, and appropriate forms of contraception for each of these conditions.

Aura migraine frequency indicates elevated estrogen levels. Taking combination birth control pills, which are the most often prescribed, as a person with aura migraines is not recommended as it leads to an increased risk of stroke. Progesterone-only forms of contraception are the only appropriate forms for those with Aura migraines because they do not further elevate estrogen levels and therefore do not lead to risk of stroke \cite{[8L],[9L],[10L], [11L]}.

Hormonal birth control can increase the risk of blood clots in some people with the risk being even higher for those who are pregnant or use the birth control patch. Newer combination pills with lower doses of estrogen (as opposed to older pills with higher doses) may be appropriate for these individuals. The vaginal ring should also not be recommended as it may increase the risk of blood clots because with the ring, the hormones are absorbed continuously \cite{[12L],[13L],[14L],[15L]}.

Those who take oral contraceptives have higher blood pressure than those who use non-hormonal contraception. There is a dose-response correlation between progesterone and blood pressure. Even small differences in the amount of progesterone a pill contains in a low-dose estrogen pill may be important, and any oral contraceptive with a less adverse effect on blood pressure has implications on general prescribing policy. Depo-Provera has been implicated in increased cardiovascular risk after use and is therefore not appropriate for those with high blood pressure \cite{[16L], [17L],[18L],[19L]}.

Premenstrual disorders, which include premenstrual syndrome and premenstrual dysphoric disorder, have clear involvement with hormonal fluctuations. SRIs (Serotonin Reuptake Inhibitors) and oral contraceptives are currently the most common forms of treatment but are insufficient due to lack of adequate or fully encompassing symptom relief with often side affects. This lack of sufficient treatment options emphasizes the increasing or both patient safety and for use in treatment of related conditions \cite{[20L],[21L],[22L],[23L]}.

pcos section \& citations

In preparation for the signup event as described in Figure X, we analysed our targeted telehealth websites, and began to accumulate a list of required customer information between all chosen sites. After conducting a trial signup event for each provider, the fake ID attributes were decided upon. Under Dr. XXX's advisement we then tailored our IDs to have a five sections in which only one variable is changed in addition to a sixth section for the control group. Of the five sections other than the control group, four test for the previously mentioned high-risk health conditions. The fifth section tests the reason for seeking out birth control. By holding all other identity-based variables constant, we developed our fake IDs using the above conditions, and were able to track which questions were asked on the websites' questionnaire and test the provided recommendations. For reference, a sample ID is shown in Figure X, and all other IDs and attributes are available in the appendix content (anonymizing some identifying information) \cite{[1L]}. We also conducted an investigation into the availability of general services and emergency contraception in each state.

Our intent with these IDs and their subsets was to first test all highly crucial recommendation factors, but also to represent common realities of individuals living in the US. By using the \emph{Use \& Abuse} framework, we were able to collect the details of various realities in a non-invasive but expansive manner in order to answer critical questions. The state of access to contraception lies in the throes of an tense political climate around this subject, and in an effort to aid in the movement towards reliable accessibility, we have analysed current telehealth options though multiple variables.

In order to fully capture the capabilities and quality of these providers, we also developed an evaluative scoring system through which to consistently analyze our results. Through this system, we are able to evaluate online birth control providers and assign numerical scores to each site based on several variables: location based accessibility, recommendation access, insurance coverage, cost and transparency, and medical accuracy. These criteria and their descriptions are show in Figure \ref{fig:descriptions}. Our hope is that the results of this evaluation become a useful tool for both individuals, companies, activists, and many others. For individuals who may be seeking birth control

online we have utilized this study to aid in finding a provider that is the safest, easiest, most informative, or least invasive option depending on needs. We also hope that this resource will help address some of the most common accessibility concerns for those seeking contraception, while also teasing out some of the risks involved with telehealth provision. Finally, for these providers and the telehealth industry itself, we intend to determine areas both successful and that need improvement in which these service can create a safer, more responsible option for those seeking birth control. In a world where especially women's healthcare can be potentially: over-focused on marketing, failing to address individuals' needs, or meeting barriers to access, we see online birth control provision as a very viable solution. If certain improvements are made to current online services, birth control deserts and improper product recommendation could be eradicated. In the meantime, if individuals are able to use the tools available in the strategies that we have identified, they too can have better and more informed access to both birth control and emergency contraception.

We would like to stress our care to not take up any more resources from the already burdened American healthcare system. We have made a best effort to only use the automated website functions of these telehealth providers in this study and to not involve any human interaction on their end. We have simply probed the automated product recommendation/promotion algorithms available on their respective websites. We also have not provided any payment or scheduling for an actual consultation or prescription at any point during the research process.

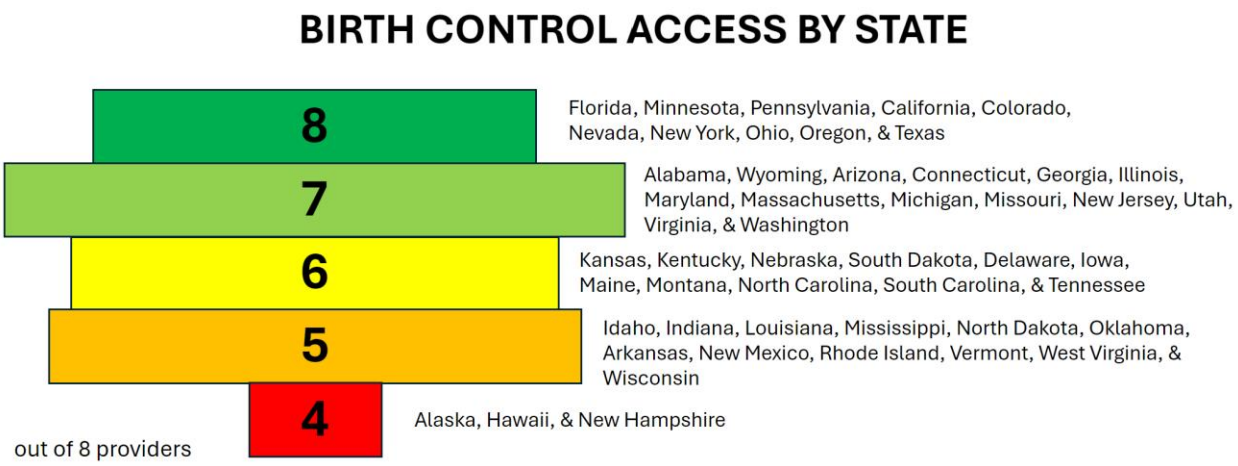
\section{Results and Data Analysis}

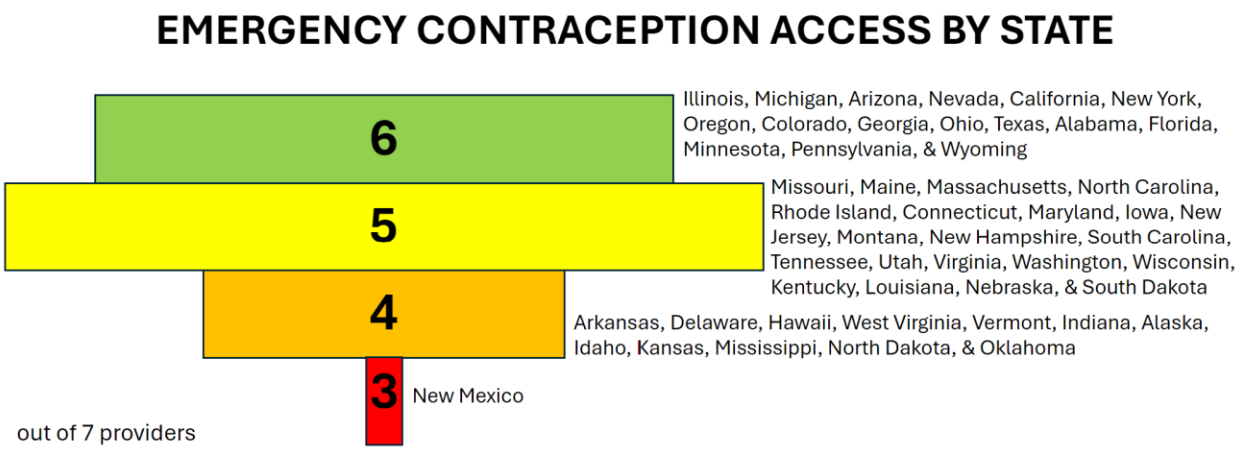
\subsection{Location Based Accessibility}

In order to analyse the aspect of accessibility for use in our final provider scoring, we collected data on whether for each U.S. state, both birth control and/or emergency contraception was available thought the websites in our study. The exception is \emph{The Lowdown} which is an education platform focused on birth control with no relation to emergency contraception in addition to not a telehealth provider. Therefore it was not included in Figure \ref{fig:emergency} \cite{[W1]}. This analysis produced the results shown in Figures \ref{fig:states} \& \ref{fig:emergency}. Here, proportional shapes showcase the number of states sitting at each numeric level of applicable telehealth

providers. For example, Figure \ref{fig:states} shows that Alabama residents have access to birth control from seven out of the eight websites in this study, and Figure \ref{fig:states} shows that Alabama residents have access to emergency contraception from six out of the seven applicable websites in this study.

As this access analysis was initially constructed, we began to notice a trend that more sparsely populated states often had lower access numbers. Using 2020 US Census Data, we ran an analysis and found that there was a XXX correlation between state population and level of access for birth control. The correlation was XXX for emergency contraception. This means that for every 100,000 people there was a XXX\% higher chance that another website would offer birth control and a XXX\% higher chance that another site would offer emergency contraception. The lack of standardized framework for digital health technologies (DHT) across different countries already makes the integration and development of DHT in healthcare to be difficult. \cite{[37S]}. However, the inconsistency with telehealth services in different parts of the country was shocking to see. While individuals living in more rural areas of highly populated states will benefit, the majority of those who could most benefit from telehealth are not being provided services.





\subsection {Recommendation Access}

- how hard is it to get an actual recommendation?

- gov id

- paywall

- sms or email verification

- why are recs with no restrain important (prices are an even better plus)

\subsection{Patient Privacy}

- need email results

- totals for fields

One concern telehealth service brings is data privacy, especially with data sharing between organizations, companies, and service providers. Cookies, coming in different forms with different functions, are small data files that store users information based on their online activity. This information is typically stored on users computer and available for websites to track \cite{[38S]}. With convenience also brings security concerns as cookies do not guarantee security, integrity, or trust of the information \cite{[27S]}. Entities use cookies for purposes such as collecting data to improve services, creating personalized ads, and reaching more consumers. In telehealth this has become a concern because extremely sensitive data, that can be used to identify a person, is being placed online (i.e. medical history, financial information, social security number, etc.).

Another aspect of online privacy are privacy policies as they are used by different entities to inform consumers how a company collects, uses, stores, and shares the consumers data and personal identifiable information. However, privacy policies have been overlooked by many consumers due to their complexity and readability \cite{[39S]}. Many studies have been conducted to analyze privacy policies in various techniques, however there have been few consistent practices of analyzing privacy policies \cite{[25S]}. For our analysis, we used the \emph{Quantitative Rubric for Privacy Policy}, created by the U\&A team to analyze the privacy policies from all the service providers in ten distinct categories\cite{[26S]}. More information about the rubric is available in the respective paper.

While analyzing each privacy policy, we found two limitations in using this rubric. We found that the rubric would not presently give an accurate rate the privacy policies of telehealth providers since the data sharing, collection, and usage practices of telehealth providers were found to be different from the companies analyzed in the research\cite{[26S]}. Also, for this research we only looked at the service providers privacy policies and not their terms and conditions, and therefore giving a score in some categories became difficult. As a solution, we created the modified rubric seen in Figure \ref{fig:privacy policy}, which follows the basis of the original rubric with some new scoring changes. We also excluded two categories, "Holding Services Harmless" and "Puts Sole Risk on Users for Breach of Personal Identifiable Information(PII)." These were eliminated due to these their attachment to terms and conditions. Because of the complexity, language, and legality of privacy policies we would like to note that the analysis of each privacy policy was done to the best of our ability and should be taken as a privacy suggestion and reflection on the culture surrounding privacy policies.

Score	Changing Terms	Ignores Do Not Track (DNT) Devices (Includes GPC-Global Privacy Control)	Personal Identifiable Information (PII) used for Ads	Release of Information to third parties
1	Change privacy policy with changes applicable retroactively.	Does not acknowledge or mention DNT signals	The service internally collects any available information (both personal and non-personal) of the users to sell and/or create targeted ads.	The service sells/distributes PII to associated third parties for purposes that do not serve as "business purposes." *Selling/sharing data to third parties unrelated to services provided by the company.
2	Change privacy policy without notification (no email notifying), but changes are forward-looking. *Notifications on top of website or banner notifying changes. Does not mention whether consumers will be notified. Assumes that company will only change the policy with no notification.	Complete recognition of these signals and denies the user the right to the website and/or continues to track the user without notification.	Collects a significant amount of PII (i.e., address, contacts, and site browsing activity). Does not collect all available PII but more than as specified in Category 3.	The service collects and sends PII to third parties for them to sell advertisements or for defined "business purposes."
3	Claims to give notice but provides vague distribution details. *Saying "*may also notify you*" or no clear explanation on how users will be notified.	Acknowledges DNT signals and continues to track only due to lack of infrastructure to support these settings/lack of standard.	Collects a 'normal' amount of PII, including name, email, address, log data, general location data ascertained from IP address, etc.	The service only releases information to third parties if the user requests a service/more information from the initial website.
4	Clear notification of changes in the privacy policy. *Stating that they "*will*" email consumers.	Acknowledges DNT signals and complies; however, the service does not allow full access to all of the present features.	Service provides a menu to disable all but necessary cookies and collects a normal/less than normal amount of PII as defined above. *Limitations to website and service after disabling all but necessary cookies.	On top of releasing information to third parties that provide direct service to users, the service releases PII only with previous consent from the user to show the user more relevant content.
5	User Permitted to opt-out of privacy policy changes/allows for extensive copies of previous policies to ensure changes.	Service complies with DNT signals and allows the user access to the full feature of the service.	Minimal to no PII is collected or used for internal targeted products or services. The user still has access to the full features of the product (when choosing to allow only necessary cookies).	The service only releases information to third parties that provide the service for the company (i.e., pharmacies, medical professionals, payment processors) with the users consent. *In the case organizations give information to organizations outside of direct service (i.e., journalists), only if information provided is de-identified.

Score	Signing away moral rights	Retention of Personal Data	Deletion of PII upon request	Information being sold due to Bankruptcy
1	A complete dismissal of these rights and liability of suit when the user agrees to a particular privacy policy. *Also, no mention of not selling data & anonymizing data.	Full retention of all data indefinitely after a user deactivates their account. *Does not include data that must be kept because of law requirements (i.e., state laws, HIPAA, etc.).	The service does not offer such a feature or continues to retain information despite a request from the user.	The company/service will sell and contribute all stored customer data as the result of being bought out or merging with another company.
2	The user obtains some say over their content; however, the particular service maintains most of the control.	Service holds information for as long as they deem necessary/after a predefined extended period of time longer than a year.	User is unable to request or delete any information; however, the service will allow less information to be collected.	User is not notified of acquisition; however, no action can be taken by the user to limit data being transferred.
3	Rights are waived; however, the privacy policy places some liability on the company, and users maintain almost equal control.	Service temporarily holds a reduced quantity of information or retains PII in case of potential reactivation. *Includes companies that keep a de-identified copy of information after deletion permitted under the privacy policy.	A user is able to request their information; however, they are unable to delete any information or request to delete is not honored. *Company claims users can delete PII if requested, however does not give instructions on how. AND does not include deletion of information that are required to be kept due to laws and regulations in place.	In merger or asset sales, data is sent to receiving company under the pretense or equivalent or improved privacy standards.
4	Waiving moral rights is optional; however, the service still has the final say over user content on the service. *Privacy policy explicitly states that information will not be sold.	Information is stored after deletion of account deletion of account only to comply with applicable regulations. A scheduled deletion is still in place with no intention of prolonged storage.	A user is able to request to delete all their information; however, they may not be able to delete most of their information only some. *Company provides information on how to request deletion of information.	User is notified that their data is forfeit due to bankruptcy/merger however, they may only be able to delete certain aspects of their PII. Some will be transferred over to the acquisition company.

After analyzing all eight privacy policies, we found differences in data use, collection, sharing, and retention of data, including PII from companies outside of telehealth services. Telehealth providers often work with third-party services to provide services to consumers (i.e.,pharmacies, medical professionals, payment processors, etc.) which requires data to be shared with these third-parties \cite{[W1], [W2], [W3],[W4],[W5],[W6],[W7],[W8]}. There are also documented laws and regulations governing these providers to retain certain medical data and records for extended periods of time \cite{[W5], [W1],[W2],[W3]}. With most of the companies, there was a lack of certainty with data being protected in the case of merging, acquisition, or bankruptcy of a company that would require data to be transferred \cite{[W6], [W8], [W1], [W4], [W2], [W3]}. Many of these companies viewed personal data as assets and provided almost no explanation as to if consumers will be able to opt-out of data sharing in the event of a transfer \cite{[W6], [W8], [W1], [W4], [W2], [W3]}. This may also be because medical records have required record retention periods as instituted by various laws depending on the state and regulations \cite{[40S]}.

\subsection{Cost Accessibility and Insurance Coverage}

During our experiment, we made a point to collect information as to insurance coverage by online contraception providers. As noted in the policy landscape above, insurance coverage (or lack thereof) as well as cost, can present major barriers to access for many patients seeking birth control. Thus, we decided to compare insurance accepted by each provider, as well as the total cost of prescription with or without insurance. We factored these fields, detailed in Figure \ref{insurance} below, into the total accessibility score of each provider.

Provider	Insurance Accepted	Cost with insurance	Cost without insurance
Optum	New York: CareMount & ProHEALTH New Jersey: Riverside Connecticut: Riverside	"Starting as low as $10/month"	"Starting as low as $10/month"
Lemonaid	None, does not take insurance	--	$15/pack, $25 consultation
TwentyEight	"Yes, we accept most insurance policies (including Medicaid) to cover your medications. If you use your insurance, you will not pay more than your copay (which is often $0), and get at-home home delivery and messaging with doctors at no additional cost. We will confirm coverage through our partner pharmacy and potential copays once we attempt to process your order."	$0 copay	$18/pack starting; prices for patch, ring, and shot start at $300/month, $130/month, and $126/3 months
Alpha	"We're not able to accept insurance for medical fees or membership fees, but some pharmacies may accept your health insurance for medication."	---	Prices range from $15/pack to $190/pack; ring = $170, patch = $175/month, shot = $330/month, ring = $2,030
Hers	None, does not take insurance	---	$20 for medication, $10 for Hers membership, $5 first time fee
Nurx	Includes aetna, Anthem BCBS, Cigna, and United Healthcare. Option to email customer service to determine if private plan is accepted.	Co-pay as low as $0	$15/pack, $18 consultation fee
Pandia	"We accept insurances including but not limited to Aetna, BlueCross BlueShield, Cigna, FamilyPact, LA Care, United Healthcare & more! Insurances we do not accept at this time include Cal Optima, Care, Humana, Kaiser, Sunshine Health, StayWell or Tricare."	Co-pay $0	As low as $15/pack
The Lowdown	Only an information hub provided.	Unclear from site	Unclear from site

For example, a site that accepts several forms of insurance, and is clear on their website as to what these plans are, would receive a higher accessibility score. Further, sites that provide contraception at a low cost without insurance would also receive a higher accessibility score. Additionally, the ease with which a patient can determine if their insurance is accepted is also considered, as the process of verifying insurance presents a temporal barrier to accessibility.

\subsection{Medical Accuracy and Responsibility}

- does the site ask about all necessary health conditions that would indicate someone should not use certain forms of birth control?

- say that they are the ones talked about earlier in the XXX section

- interview with healthcare professional for support and more notes

- can put in part of the interview here on the impact of not asking these questions

\subsection{Website Performance Summaries}

- we are going to split this up by website, not by evaluation area, but still working on this

There are several major points to be drawn from these figures. Of the providers we studied, Hers, Lemonaid, and Alpha do not accept insurance. The relative cost of these services is low, beginning at around 15 dollars per pack for the pill; these prices are not, however, considerably cheaper than other sites that do accept insurance. Hers and Lemonaid do not detail the cost of other birth control that may be substantially more expensive. For example, Alpha does detail the increased cost of other methods, which can be as expensive as 190 dollars per pack for some pills, 330 per syringe for the shot, 175 per month for the patch and up to 2,030 for the ring. Many of these prices are highly inaccessible, particularly for women whose specific needs require a form other than generic pills. While Alpha does recommend appealing to your pharmacy to see if they will accept your insurance, they do not take insurance directly; further, each of these sites also charges a consultation fee (up to 25) and a monthly membership fee for a prescription.

Other sites do a bit better in terms of accepting insurance, but their pricing for those without insurance is less clear. Pandia is very clear as to what insurance is accepted, and both Nurx and TwentyEight maintain a customer service option to confirm your coverage, either directly or through the patient's pharmacy. Optum and Lemonaid are not clear on coverage, and are even less clear on prices without coverage, but do not appear to charge a consultation fee, unlike Nurx, which charges 18.

\subsection{Website Accessibility and Information}

**pull in info of insurance accessibility, scan websites for warnings about medical conditions; how educational are they, and how easy is it to figure out the process for getting BC?

\section{Scoring and Suggestions}

Considering these results, our final scores are shown in Figure \ref{fig:scores} and further described in Figure \ref{fig:descriptions}. The following section also includes individual website findings summaries including our study results awards.

SCORE	accessability	recomendation access	insurance coverage	cost & transparency	privacy	medical acuracy
0	0 states	overly invasive	does not take insurance	not decipherable if fees	No statement of privacy protection to many or all data.	0/5 vital questions asked
1	10 states	requires government id	very limited insurace accepted	little info, fees	Policy states minimal to no protection of data.	1/5 vital questions asked
2	20 states	behind paywall	limited insurace accepted, limited info	little info, no fees	vague on data sharing, collecting, and usage. requires reader assumptions.	2/5 vital questions asked
3	30 states	sms or email verification	some coverage, lists prices	price info, no fees, vague language	Clear on most parts, but still provide lack of clarity on a few.	3/5 vital questions asked
4	40 states	no restraint	most accepted, yes and no coverage list, co-pay is $0	clear product prices, fees	explicit on data sharing, collecting, usage. consent over data, not total control.	4/5 vital questions asked
5	50 states	no restraint and specific	accepts most, plans list, customer service to confirm	clear product prices, no fees	explicit on data sharing, collecting, and usage. users have control over data.	5/5 vital questions asked

WEBSITE:	accessibility	recomendation access	insurance coverage	cost & transparency	privacy	medical acuracy	multiplier	total score	ranking	awards
ALPHA	5	2	0	4	4	no data	5	3.0000	6	-
HERS	5	5	0	4	3	5	5	4.2000	2	Best in a contraceptive desert
LEMONAID	5	0	0	1	3.5	3	5	2.4500	7	-
NURX	3.5	1	4	4	3	3	5	3.0500	4	-
OPTUM	2.5	1	1	0	2.5	5	5	3.2000	3	-
PANDIA	1.5	5	4	3	3	1	5	2.1500	8	-
TEWNTYEIGHT	4	4	5	4	3	2	5	3.0000	5	Best overall for perscription & Best for insurance coverage & Best for emergency contraception
THE LOWDOWN	5	4	n/a	n/a	3.5	5	5	4.6875	1	Best overall for information

\subsection{Alpha:}

Alpha offers services in 48 states but do not offer any insurance coverage. They do however have great cost transparency as well as great privacy information. Due to having multiple recommendation access barriers, we were not able to gather data on their asking of high-risk health questions in their online recommendation tool. Their total score comes to a 3.0 out of five taking the number six spot in our study. We would like to award them the \emph{Trusted Privacy Steward} award due to the fact that they had the highest privacy score of all the providers in our study.

\cite{[W5]}

\subsection{Hers:}

Hers excels in accessibility, access, and accuracy with contraception access in all 50 states, very easy access to recommendations, and all high-risk health questions covered. Their flaw is lack of any insurance acceptance. They do however do great in cost transparency and have relatively adequate privacy information. Their total score comes to a 4.2 out of five taking the number two spot for best telehealth provider for contraception in this study. We would also like to award them \emph{Best Provider in a Contraceptive Desert}, due to the best combination of both accessibility and recommendation access.

\cite{[W3]}

\subsection{Lemonaid:}

Lemonaid offers services in 50 states but does not offer any insurance coverage. They also have a multitude of access barriers to a recommendation. They have almost no cost transparency, but offer very adequate privacy information. They ask three out of five of all the required high-risk health questions in their online recommendation tool. Their total score comes to a 4.45 our of five taking the number 7 spot in our study.

\cite{[W7]}

\subsection{Nurx:}

Nurx offers services in 35 states, and has great insurance coverage and cost transparency. They do however have very low access to a recommendation, but have an adequate privacy policy. They ask three put of the five required high-risk health questions in their online recommendation tool. Their total score comes to a 3.05 out of five taking the number four spot in our study.

\cite{[W2]}

\subsection{Optum:}

Optum offers services in 25 states, and has many barriers to recommendation access and very little insurance coverage. They also have no cost transparency but do offer some

privacy information. That being said, they do ask all five out of five of all the required high-risk health questions in their online recommendation tool. Their total score comes to a 3.2 out of five taking the number three spot in our study.

\cite{[W8]}

\subsection{Pandia:}

Pandia offers services in 16 states, but excels in ease of recommendation access. They have great insurance coverage with both adequate cost transparency and privacy information. They do however only ask one put of the five required high-risk health questions in their online recommendation tool, which greatly impacted their score. Their total score comes to a 2.15 our of five taking the number eight spot in our study.

\cite{[W4]}

\subsection{TwentyEight:}

TwentyEight offers services in 41 states, has great recommendation access and cost transparency as well as excellent insurance coverage. They also offer adequate privacy information but only ask two out of the five required high-risk health questions in their online recommendation tool. Their total score comes to a 3.0 out of 5 taking the number five spot in our study. We would like to award them \emph{Best Overall for obtaining a Prescription} and \emph{Best for Insurance Coverage} for their combination of relatively high availability, excellent insurance coverage and, great cost transparency. We would also like to award them \emph{Best for Emergency Contraception} due to their outstanding access to emergency contraception in all U.S. states and Providences without a prescription, and without any barriers to access.

\cite{[W6]}

\subsection{The Lowdown:}

The Lowdown is unique in that it is an information site and not a telehealth provider so insurance coverage and cost transparency scoring was not applicable. They are however available in multiple countries and all 50 states, and they have great recommendation access. They have very adequate privacy information and ask all of the five required high-risk health questions in their online recommendation tool. Their total score comes to a

4.6875 taking the number one spot in our study. We would like to award them \emph{Best Overall for Information} due to very personalized information that was also thoroughly explained as well as giving products that should be avoided and why, and a community to lean on throughout the process.

\cite{[W1]}

\section{Conclusions}

fill in

\section{Future Work}

\subsection{Telehealth Privacy Policies}

fill in

\subsection{Aestheticization of Healthcare}

As a clear result of the...

\subsection{Other Healthcare Products}

fill in

\subsection{Government ID Requirements, Policy, and Issues}

fill in

\section{Acknowledgements}

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