Democracy and STI-prevalence in the developing world

Vogels, Tijne

Universiteit
Leiden
The Netherlands

Democracy and STI-prevalence in the developing world

Thesis

BSc International Relations and Organizations

Tijne Vogels

S2733943

20-12-2024

Word count: 8299

Public

Introduction

Sexually transmitted infections have been around for centuries and have always been a significant health problem (Kinghorn, 2001, p. 370). The appearance of HIV/AIDS in the 1970s and a continued surge in infections the past few decades has dominated the research field due to the immense death toll. But while the topic of HIV/AIDS is heavily studied, the same cannot be said for other STIs (Ramchandani & Golden, 2019). STIs such as syphilis, gonorrhoea, chlamydia and trichomoniasis, are understudied, but extremely relevant to study due to the fact that they are curable. Although they can be cured, there are more than 1 million STIs transmitted every single day, and an increase in cases has been reported (WHO, 2024). These cases have significant health consequences. In 2022, almost a quarter of a million people died from syphilis (WHO, 2024). These deaths, and other health complications caused by STIs, are preventable. The promotion of safe sex and the use of condoms alone could prevent millions of cases. Most infection-related health problems can also be prevented by quick treatment, with a simple antibiotic treatment (WHO, 2024).

The issue should thus in theory be quite an easy one to tackle. In reality, however, it remains a significant health crisis. The CDC (2024) already describes an "out-of-control STD epidemic" in the US this year. The crisis is even more severe in developing countries, where 75-85% of all new STI cases are reported (Mayaud & Mabey, 2004). These countries lack the existing infrastructure, knowledge and funding to solve the problem.

Institutional factors such as democracy are important for enabling STI prevention policies, because they shape behaviour, norms and rules (FCDO, 2023). The past decade, there has been consistent democratic backsliding (Waldner & Lust, 2018). This makes researching democracy a continued interesting topic. There is much variation between democracies as well. As democracy indexes are based on multiple indicators, the way each democracy functions can differ. The effect of democracy is therefore extremely relevant to study, especially in combination with the increase in STI rates. Although there have been papers on democracy and HIV/AIDS, the link to other STIs is, again, not made. Despite the fact that research has shown that democracy has a significantly positive effect on AIDS treatment, whether the same goes for other STIs is unknown (Justesen, 2012, p. 384).

This paper will attempt to fill this research gap. The research question this paper will aim to answer is therefore, "What is the effect of democracy on STI prevalence in developing

countries?". First, democracy and STI prevalence will be conceptualized, followed by the determinants of STI transmission. The theories linking democracy to STI prevalence will then be explained. After the theoretical framework, the research design will be clarified, including control variables and the model. A linear regression will be conducted, showing the results. Lastly, the results will be interpreted and implications will be discussed.

Theoretical Framework

Democracy

First, the independent variable, democracy, will be conceptualized and explained. The focus of this research will mainly be the difference between democratic and non-democratic regimes. The concept of democracy has existed for over two millennia, originating from ancient Greece. Something that has characterized a democracy since, is rule by the people (Fleck & Hanssen, 2006, p. 115). This shows the aim of democracy to decentralize power, and share it among the people. Over the past 2000 years, the notion of democracy has evolved further.

The most basic meaning of democracy nowadays is that democratic regimes have competitive elections, and non-democratic regimes do not. For this paper, however, it is important we go further than that. A liberal democratic regime aims to protect its citizens through preserving individual rights and freedoms, transparency and openness. It is these institutions, rather than just fair elections, that can make a difference for the prevalence of sexually transmitted infections. This will therefore be the notion of democracy we will be using in this paper.

Looking more in-depth into the characteristics that define a liberal democracy, transparency is seen as closely related to a democracy. As Hollyer et al. (2011, p. 1192) argue, one is needed for the other. Dahl (2008) looks at other characteristics and goes further than the standard definition of democracy, which is political equality. He argues that the freedom of expression and alternative sources of information, among others, are necessities in a democratic state. This focus on transparency and information is supported by more scholars. Gringas (2012, p. 223) even argues that, "information is considered vital to democracy". The pinnacles of a democracy are defined by Rosenberger and Gorman (2020, p. 75) as the freedoms of expression, the press and association, which all motivate the spread of information. These rights and institutions are something democracies tend to pride themselves on and judge one another on, since it is "expected" of democracies to be transparent and open (Dror, 1999, p. 63).

In comparison, authoritarian regimes tend not to promote openness and transparency as this can be a threat. Methods such as propaganda and censorship are used in order to control their citizens and prevent opposition (Rosenberger & Gorman, 2020, p. 75). With the rise of the internet, autocracies have had to adjust and resort to methods such as hacking and surveillance, in addition to censoring. Repressing and weakening civil society prevents mobilization which could threaten the regime (Chang and Lin, 2020). Autocratic regimes can also use the media and internet to their advantage by spreading false information or to promote their regime. By censoring other uses of these networks, this can be a very powerful tool (Rød and Weidmann, 2015). This does not mean that there is a perfect level of transparency in all democracies, but it does mean that democracies are more likely to strive for transparency and democratic values alike. We will thus look at the extent to which states attain to this standard.

STI prevalence

The dependent variable is the prevalence of sexually transmitted infections, or abbreviated STIs. The term STI is often arbitrarily interchanged with the term STD, which stands for sexually transmitted diseases. The technical difference between the two is difficult to pinpoint, as there is no consensus and many people think the meaning is the same. However, most scholars seem to think that a STI can lead to a STD, which is then a disease when there are symptoms (Royer and Cerf, 2009). Since this paper will be researching STIs without a display of symptoms as well, this is the term that will be used in my arguments.

According to the WHO (2024), "more than 30 different bacteria, viruses and parasites are known to be transmitted through sexual contact, including vaginal, anal and oral sex." There are other ways in which STIs can be transmitted, such as during pregnancy. Some viral infections can also be transmitted through blood contact, such as HIV and Hepatitis B, but these are not included in this analysis. These cannot be cured, only repressed. We will focus on the four most prevalent curable infections in this paper, Syphilis, Gonorrhoea, Chlamydia and Trichomoniasis (Ağaçfidan and Kohl, 1999). To show the magnitude of the problem, of all the people between 15 and 49, which is the target age we will be using in this paper, 1 million get infected each day worldwide (WHO, 2024). There are enormous health consequences connected to these infection rates. STIs can lead to, among others, death, infertility, ectopic pregnancy and an increased risk of HIV infection (Low et al., 2006). Although women are disproportionately affected by STIs, men

still account for one third of the total amount of infections, and should thus be included (WHO, 2019 [dataset])

There are two reasons to exclude the non-curable infections. Firstly, since we will also look at the influence of democracy on healthcare and expenditure, it makes more sense to include the infections which are curable. This is because better health care cannot cure non-curable infections that have already occurred, these will keep contributing to STI rates. Improved treatment and expenditure can, however, influence the decline of treatable STIs.

Secondly, there is much more attention on HIV, which causes AIDS and is the most prevalent non-curable STI. It has a continuously high infection rate and high mortality, which is why it is so interesting to study. (Shao & Shao, 2023). There has thus already been a lot of research done on HIV compared to STIs. Additionally, AIDS-preventive programs are highly politicized and have more funding (Piot, 2007). It would therefore be more interesting to focus on other less-studied and less-prioritized STIs for this paper.

STI determinants

There are multiple factors which can determine the infection rate of STIs. Since the majority of STIs is transmitted during sexual intercourse, sexual behaviour plays an important role. The more different partners an individual has sexual intercourse with, the greater the exposure to STIs and subsequently the higher the STI rate (Aral et al., 2006). A second determinant of STI prevalence is the availability of contraceptives. Condom use is extremely important in preventing the spread of STIs, due the barrier helping to prevent the spread of bodily fluids (WHO, 2024). However, condom availability is inconsistent and not adequately available, especially in developing countries in sub-Saharan Africa, which is mainly due to insufficient funding (UN Aids, 2024). Even where condoms are available, people need to know how to correctly use them. This leads to the third determinant, information availability. People are often not aware of the risks of unprotected sex, especially in places where comprehensive sex education (CSE) is lacking. Condom use needs to be promoted and explained. The last determinant is the extent to which patriarchal values influence social norms. In patriarchal states, sexual violence is more likely to occur, which increases the chances of STI transmission. Women are also less likely to argue for safe sex (Sharma, 2021). There is a higher stigma on sexual violence and STIs, which could lead to women staying silent and not seeking treatment (Kreft, 2020).

After infection has taken place, there are multiple types of health interventions which can help. Information plays an important role in this part of the process as well. People need to be able to recognize the symptoms of a STI in order to seek help. CSE and counselling can help increase awareness of STIs, as well as promote treatment (WHO, 2024). Unfortunately, STIs are often asymptomatic, which complicates this process (Unemo et al., 2017). Rapid tests and consistent screening for marginalized groups can be beneficial in diagnosing STIs as early as possible (WHO, 2024). Treatment of the four curable STIs we are focussing on is relatively easy, and can be done by antibiotics. However, due to the risks of transmission, asymptomatic nature and health issues that occur when STIs remain untreated, quick diagnosing remains extremely important yet difficult to achieve in developing countries.

An aspect to STIs that must be taken into consideration, is the particular stigmatization compared to other health issues. As sexual intercourse can be seen as immoral behaviour, this makes it more difficult to solve these issues (Lieberman, 2007, p. 1429). As Lieberman (2007, p. 1414) shows in regards to AIDS, people are less likely to lobby for better preventive policies when it concerns stigmatized diseases. The fear of being associated with such a disease is strong, especially in fractured societies. This stigmatization can be reduced by more openness in health-related policies. When looking at attempts to educate people in these countries, in which cultural and religious values often play a big role, abstinence is promoted as the only appropriate measure (Achen et al., 2023, p. 222). This is an extremely limited and lacking approach, which can be improved when sexual intercourse and STIs are destigmatized.

The gender role within this issue is relevant as well, as there is a disproportionate effect of sexual and productive health issues on adolescent girls, which contrasts the fact that boys are still more likely to get education than girls, although this gap is declining (Achen et al., 2023, p. 221; Grant & Behrman, 2010, p. 73). Even if there were to be sufficient educational programs, they would thus be less likely to reach girls. Another aspect to this gender role is that although it might be easier to reach boys and men, they tend to not be the focus group of CSE. However, men, despite the fact that they are affected to a lesser extent, add to STI rates as well and should thus be included in CSE programs.

Theory 1: Democracy increases the flow of information

A crucial aspect of STI control is the spread of information. People, especially in the developing world, are often not aware of the risks of unsafe sexual intercourse. Something that does not help, is the lack of consistent education and sex education. Education is generally less comprehensive, enrolment rates are much lower and the average years of education are shorter in developing countries (Glewwe & Muralidharan, 2016). This makes CSE particularly difficult as the educational platform is lacking. This could mean that CSE is less influenced by factors such as democracy, since the infrastructure needed is simply lacking in developing countries. A democratic government promoting openness and transparency, however, can be extremely valuable in spreading reliable information and advancing STI preventive policies through other measures than education.

Freedom of the press and the media in a democracy can affect the prevalence of STIs in multiple ways. In regimes where the media is unrestricted by the government, the power shifts towards the public. This enables them to openly state their opinion and share information. This is something that is extremely useful for lobbying groups. The media can be used as a powerful tool for pushing STI preventive policies onto the national agenda.

Another positive effect of the use of digital media is that it makes it much easier to gain access to information. Videos and blogs, among other platforms, are likely to get used for sexual health questions, according to research (Gilliam et al., 2014, p. 383). Information about symptoms, treatment options and even how to correctly use contraceptives can be easily accessed. Additionally, unrestricted access to the internet can make it easier to ask for others' opinions on these health-related issues. As Daher et al. 's (2017, p. 7) research shows, "interactive social media were effective in reducing risky sexual behaviours".

Not only can citizens use the freedom of the media and press to their advantage, so can the government. Especially in today's world this is extremely relevant. Information can be spread immediately, to millions of people. In case of a STI crisis, people can be warned quickly. When the government aims to promote STI testing, this can be an easy and relatively low-cost way of doing it. Informational videos on what symptoms can look like, could even help alleviate stress on the health care system.

Looking at this from another point of view, there is relatively little privacy on social media. This could work against sharing information about sexual health issues online. Especially

considering the particular stigmatization attached to STIs, people could be hesitant to share or look for information using these platforms (Gilliam et al., 2014, p. 383). However, as culture and religion stimulating stigmatization are mostly taught in familiar circles, exposure to outside media and other opinions can take away this shame and allow for a more open education. Online resources could thus still be more accessible than a face-to-face consultation.

Theory 2: Democracies spend more on health care

There are multiple reasons to think democratic regimes are more invested in their citizens' welfare. First, this could be through accountability reasoning. Policymakers essentially depend on citizens' votes in order to get re-elected, which is how they get held accountable (Olsen, 2017, p. 530). Investing more money into health care to improve people's lives could therefore be quite beneficial for policymakers, since they can show off their successes in new elections. Secondly, since in a democracy the political power is shared between policymakers, there is a larger sense of responsibility. The division of governmental expenditure and the national agenda is not decided by one person or a small elite, which prevents misappropriation of money. These checks and balances all work to benefit the entire population instead of just a select group of people.

The last few decades, there has been much research done on the link between democracy and health(care). The majority of scholars agree on the fact that a democratic regime has a positive influence on multiple health outcomes (Ruger, 2005; Safaei, 2006). Patterson and Veenstra (2016, p. 68) show, using statistical analysis, that the longer a regime is democratic, the more life expectancy increases and infant mortality decreases, which are both extremely relevant health outcomes.

We can lead this result back to health care expenditure. According to Besley and Kudamatsu (2006, p. 317) "governments in "permanent" democracy spend around $160 (in purchasing power parity terms) per person more on health than those in "permanent" autocracy". A more recent paper showed that a democratic regime transition has a significant and positive effect on health expenditure, straight from the first year after the transition, until the seventh year (Blum et al., 2021, p. 346). This is interesting because it suggests that the effect of having a democratic regime has an almost immediate effect on how much the government invests in health care.

Something that does need to be kept in mind, is that expenditure still needs time to be converted into better health outcomes. However, in the long run, having more health expenditure

logically leads to better health outcomes. With increased expenditure, there are more funds to spend on doing medical research to develop cures, to improve condom availability and to import the necessary equipment and information from more developed countries. This could make a big difference in developing countries, which are disproportionately affected by STIs. The more infected people that can get treated for STIs, the more the STI rate decreases. The reason is that STIs can linger for years and during this time, one person carrying an STI can infect many more people. The result is an exponential growth in infection rates. Quick and reliable treatment is therefore crucial in STI control.

In addition to health care spending, there are other ways in which more funding can make a difference. Before people even arrive at a health care centre to receive treatment, people need to be informed about STIs. Raising awareness about the dangers of leaving an STI untreated and spreading information about the treatment people can receive are vital for the health care funding to have an effect. Spreading information can happen in many ways, such as via the internet, newspapers or posters for example, which need funding as well.

Another aspect that is extremely relevant, is accurate, available and consistent screening. This has proven to be quite a challenge in many developing countries. There are not sufficient health care services available for the number of people that need to get tested. Rapid tests have been in development as a solution, but are difficult to achieve as well (Peeling et al., 2006, p. 2). One of the issues is the lack of affordability, as it needs to be widely available for a very low cost to target the most vulnerable part of the population. In countries with low health care funding or lack of political motivation, this problem is a difficult one to solve (Peeling et al., 2006, p. 4). When there is more health funding, which is the case in democracies, this could be used to lower the cost and improve availability of screening tests.

The other side to this argument is that since representatives in a democracy are motivated by re-election, they might be incentivized to focus on policies that people can see. Since STI prevention is not as easy to see, they could focus solely on treatment as there are better results to show. This focus on short-term fixes, could eventually work against solving the STI crisis.

Theory 3: Democracy increases trust

The other side of this dialogue is one that needs exploring as well. There might arguably be better information availability and healthcare in democratic societies, but this leaves open to

what extent citizens have faith in democratic institutions and actively seek help for STI-treatment. There needs to be a trusting relationship between citizens and both government and health institutions. If this trust is lacking, citizens are less likely to believe information about health issues, follow advice or seek treatment. This is especially true for STIs, due to their stigmatized nature.

As explained in the first theory, there are multiple differences between democratic institutions and autocratic institutions. Starting with elections, this already changes the entire political structure of a country, in the sense that people can choose their representative. But more importantly, the democratic institutions that go further than just voting, matter. According to Warren (2018, p. 77), "Democracies protect [trust] relationships through actionable rights, especially the rights that protect association, speech, conscience, and petition, as well as due process rights against arbitrary or discriminatory actions by the state or other entities with public roles or functions". These rights do not automatically mean that there is trust, but it does mean that they allow space for trust relationships.

For democracies, it is relevant to promote trust, as higher trust levels can in turn strengthen democratic institutions (Brezzi et al., 2021). The OECD has pointed towards three extremely important factors that affect trust in public institutions, transparency, openness and fairness (Brezzi et al, 2021, p. 42). These three factors are deeply rooted values for democratic regimes. It is therefore logical to assume that democratic regimes foster more trusting relationships with their citizens. Uslaner (2003, pp. 173 & 180) echoes this statement, with the argument that democracies are more trusting because democratic governments aim for equality-generating policies, and especially an equal distribution of resources.

Autocracies, on the other hand, are negatively related to trust (Xu & Jin, 2018, p. 363). Boese-Schlosser et al. (2023) argue that people in autocratic regimes are less likely to believe their government's health messages are truthful. They then show that there is a strong relationship between vaccine hesitancy and autocratic rule. This means that lower trust has an impact on citizens' likelihood to seek health care.

A high level of trust is extremely important in sexual relationships and STI prevention. As shown in research, building a social network based on trust within communities had a positive impact on people's behaviours. Thomas et al. (2001, p. 544) find that after this experiment, "consistent condom use increased 23%. Seeking care for an STD within three days of symptoms

increased 60%. Seeking screening for an STD among those who suspected exposure increased 26%".

A higher level of trust is clearly not a guaranteed effect for each democracy, since the specific institutions creating trust can differ. However, in democracies there could be more space for trust. When there is more trust in the political institutions and the health care system, people are more likely to trust information about crises and follow their instructions. Promoting STI screening and STI treatment are thus more likely to succeed. The more people come in for screening and treatment, the lower the STI rate.

Counter theory: Democracies are more promiscuous

The counterargument to this is that due to the more open nature of democratic regimes, people living in democracies might be more sexually active and have more sexual partners, which in turn increases the risk of catching an STI.

Firstly, this increased sexual activity can be due to indirect effects. Since democracies have a higher GDP, there is more money to spend (Acemoglu et al, 2019). People have more financial freedom and are freer to move around. Due to increased mobility, there is a wider area in which STIs can be transmitted. Additionally, there was shown to be a positive relationship between democracies and urbanization in the past (Glaeser et al., 2018, p. 2). More people living together could also enable more sexual contact and different sexual partners, increasing the chances of transmission.

The second argument is more related to democratic institutions. In a democracy, there is more focus on the individual rights of a person. The principles of equality, and freedoms of expression and association are the main examples of this. Due to the way an individual is protected by these rights, there is less risk attached to promiscuous behaviour. The emphasis on "freedom" and protection of human rights in declarations and constitutions in democratic regimes means people are allowed individual freedom which must be respected by the state (Donnelly, 1999). While this freedom is clearly defined to fall within national laws and obligations, this is still a significant difference from authoritarian regimes in which these rights are not protected. On the contrary, these rights are often actively repressed (Escribà-Folch, 2013).

Something worth mentioning is that some of the biggest accusers of the "promiscuity" of the West, are leaders of non-democracies. Putin, for example, accused the West of being "sexual

deviants" (Newsweek, 2023). He also passed a "gay propaganda" law, characterizing "LGBT people as a symptom of perversion imported from Western Europe or North America" (Human Rights Watch, 2018).

When comparing autocracies to democracies in which citizens are allowed to choose their own "[...] social and cultural systems" (Donnelly, 1999, p. 615), it is clear that there is a large difference. Democracies are less able to control their citizens' personal lives and potential promiscuity, which means that there is less risk when engaging in such activities and it might thus happen more.

However, we can also look at this relationship the other way around. People in democracies could be aware of their lower STI rate and know how to have sexual intercourse safely. This could increase sexual activity since people know there is less risk. Moreover, people living in democracies could be more satisfied with health care institutions, and thus trust that even if they get infected, there is treatment available. This then leads to a decreased perception of risk as well, which could increase frequency of sex and number of bed partners.

The implication of this is that while democracies might have better institutions helping STI control, they might also be catching more STIs due to higher sexual freedom and activity. This means that STI-prevalence and the STI preventive policies go hand in hand. As democratic countries are then able to "treat" their extra cases, this would mean that there is no clear difference in STI-prevalence between democratic and non-democratic regimes.

Hypothesis

Having looked at the ways in which democracy and STI prevalence are related, there are multiple reasons to believe democracy decreases STI rates. Democracies have domestic institutions, which are better capable of preventing and treating STIs. Through more accessible informational platforms, people can easily find information about the use of contraceptives or inform each other about sexual health. When infection does take place, the democratic focus on welfare ensures that there are more funds being invested in healthcare which leads to better treatment. The larger level of trust which a democracy allows for also promotes that people seek treatment.

Although people in democracies are less restricted in their freedom and could therefore be more prone to catching an STI, the ability of democracies to promote safe sex and treat infections

is still very likely to decrease overall STI prevalence. For this reason, we will be testing the following hypothesis: H_1 = Democracy decreases STI prevalence.

Research Design

In order to find the answer to the question, "What is the effect of regime type on the prevalence of sexually transmitted diseases?", this paper will compare democracy indexes and STI prevalence in 65 developing countries. A linear regression with four control variables and different models will be used to establish whether there is a relationship and potential causality between STI-rates and democracy. As both variables are continuous, a linear regression is the right choice. Rather than simply comparing the data from STI-rates and democracy, holding constant four variables allows us to control for other factors and thus makes the results much more reliable. Looking at data from 65 countries increases reliability and robustness of the analysis.

By taking the average democracy from 2010-2019 and comparing this average with the STI-rates in 2019, we avoid the risk of reverse causation. This strengthens the analysis and makes sure we actually test the influence of democracy on STI-rates, not the other way around. Furthermore, there is no direct evidence that curable STI-rates have an effect on democracy. Looking at the HIV/AIDS crisis, of which there is more research available, this is theorized to potentially have a negative effect on the quality of democracy in extreme situations (Manning, 2002, p. 26). However, this is not based on evidence, and due to the incurable nature of HIV-infection, we cannot link this to curable STI-rates.

Democracy

The average Liberal Democracy Index of 2010 up until 2019 will be used to predict STI-prevalence in 2019. This is better than comparing democracy and STI-rates in the same year due to multiple reasons. The results of a regime change from a democratic to an autocratic regime, or an increased democratic regime likely will not have a large effect that same year. This is because regimes need time to settle, and to draft and implement specific policies, but also because it takes time to change citizens' behaviour. When a government decides to invest more into healthcare, for example, these investments need time to be converted into materials, knowledge or research. Additionally, STIs can go undetected for years, as in many cases they are asymptomatic (WHO, 2024). It could thus be that a STI gets reported in a certain year, but was transmitted during another

regime which was potentially more or less democratic. By adding democracy as an average index over the span of ten years, we control for these cases.

The Liberal Democracy Index has been taken from V-Dem (V-Dem, 2024 [dataset]). The index looks at the extent to which liberal democracy is achieved. As Coppedge et al. (2024, p. 48) explain, "the liberal principle of democracy emphasizes the importance of protecting individual and minority rights against the tyranny of the state and the tyranny of the majority". For a complete measure of this index, it considers civil liberties, rule of law, the independence of the judiciary, checks and balances and electoral democracy. The index ranges from 0, least liberal democratic, to 1, most liberal democratic. The reason for choosing this dataset instead of the "Electoral Democracy Index", is that the measure of liberal democracy fits better with the focus on the democratic institutions that protect individual rights in this paper. Although none of the countries used in this research are liberal democracies, the liberal democracy index indicates to what extent liberal democracy is achieved, which is more relevant.

STI prevalence

The prevalence of sexually transmitted diseases will be measured in the year 2019. Four curable STIs, Syphilis, Gonorrhoea, Chlamydia and Trichomoniasis, are measured jointly and make up the dependent variable. The year 2019 is used since this was the most recent year of which there was data of all four STIs available and measured per country. The 10-year span over which democracy is rated is adjusted to the STI data. The data is available per country and per 100.000 citizens which makes the data comparable. As both men and women are suffering from STIs, we take both into account for our STI rates. The dataset used was taken from the World Population Review, which has aggregated the data from the WHO Global Health Observatory (2024 [dataset]), containing data of the four specific STIs mentioned above.

Case selection

This research will be conducted on the national level, so using countries. The independent variable, democracy, can practically only be measured on a country-level because this depends on the national government. Taking democracy on a more local-level is more difficult due to definition-issues and data-availability. Secondly, STI preventive policies are generated on the national level as well, by policy makers in government. There could be more local policies in some

cases, but these are again more difficult to aggregate. In addition to that, STIs are quick to spread beyond subnational borders.

However, not all countries will be included in the analysis. Due to the disproportionate amount of cases being reported in developing countries compared to developed countries, these are the countries we will focus on.

To determine which countries are considered developing countries, the Human Development Index is a reliable indicator (UNDP, 2024 [dataset]), as it takes into account development in different areas. Life expectancy, education and income are considered for this indicator. All countries up until an index of 0.70, rounded to two decimals, are included in this analysis. The division of 0.70 was chosen, because the indexes of 0 to 0.60 mainly include African countries. When taking 0.70, there are also some countries from Asia and South-America included, which makes the analysis more generalizable worldwide.

We thus end up with 65 developing countries in the year 2019, of which there was data on democracy and STI prevalence, but also sufficient data availability for the control variables. The cases that had missing data for more than one control variable, were taken out. Some cases had missing data for only one control variable, these will be discussed. For GDP per capita, there was only information about Yemen from 2018, South Sudan from 2015 and Eritrea from 2011. For the Human Development Index, there was only information about Somalia from 2022. Due to the conflicts and crises in these countries, we cannot assume that the values from these years are around the same as in 2019.

Including these countries experiencing conflict, would increase generalizability. Additionally, including extra cases is better in general as it means there is more data to compare. Although it would have thus been interesting to include them, in this paper, they will be excluded due to the possibility of inaccurate data. In conflict situations, conditions can switch rapidly, and so can the data. Excluding them increases the internal validity and accuracy since we know that the regression has been run based on reliable data.

Control variables

Gross Domestic Product

The first control variable is the Gross Domestic Product (GDP) per capita, per country. It is important to add GDP per capita to our linear regression, as it is the most clear confounding

variable. Income has an impact on almost all factors in a society. To start with the independent variable, democracy and income go hand in hand. Democracy allows for more market opportunities, while a higher income is found to promote "the emergence of democratic political institutions" (Londregan & Poole, 1996, p. 28). Income also has an effect on STI prevalence. If people have a higher income, it is easier to buy contraceptives or pay for screening services and treatment, which can limit STI transmission. Additionally, the more income is generated, the more funds there are to invest in healthcare. Maskileyson (2014) found a statistically significant positive relationship in all six of her cases; people that are wealthier are in better health than poor people. Pritchett and Summers (1993) also show this link on the national level. The wealthier countries are, the healthier they are.

This data looks at the average income per citizen and is measured in US dollars. The data for this variable is taken from the World Bank (2023 [dataset]), as this was the most complete and detailed dataset. However, there were still three cases, aforementioned, of which there was no data for 2019. For all the other cases, GDP from 2019 was available and added to the dataset for this paper after being rounded to two decimals.

Foreign Aid

The second control variable is Foreign Aid received in 2019, per capita per country. Foreign aid is an important factor in our regression, as it influences both democracy and STI prevalence. One of the most important determinants for giving foreign aid, how much and to whom, is underlying politics. Instead of foreign aid being given out freely, it is often decided by strategy, alliances and what donor countries wish to achieve in a country receiving aid (Alesina, 2000). Often, foreign aid is given by donor countries in order to advance democratization, but also to reward countries that have started the democratization process (Brown, 2005). While there is no consensus on whether foreign aid has a long-term positive impact on democratization, a recent study by Kersting and Kilby (2014) does find a small but significant effect of aid on democracy. The effect of foreign aid on STI prevalence is rather straightforward. Monetary funds can be invested into healthcare, spread of information and screening services, which were explained in the theory section. These can all help reduce STI prevalence. Something to note is that if democracy increases foreign aid, which then reduces STI rates, this is another way in which democracy can

decrease STI prevalence. However, it is not included in the theory section since the focus of this paper lies on domestic effects of democracy.

This is measured in US dollars as well. The data used to measure foreign aid is taken from the OECD and UN (2018 [dataset]), with processing by Our World in Data. This data was chosen because there was complete data for all of my cases, which is necessary for an accurate regression. This variable measures the "sum of country programmable aid (CPA), humanitarian and food aid, divided by the population size" (OECD and UN, 2018 [dataset]).

Something that needs to be considered when looking at this control variable, is that the data for 2019 is based on the forward spending plans of the OECD, as this dataset is from 2018. However, the data is still usable, because as seen in the dataset, there are not many noticeable changes in aid received the couple of years before 2019. This would suggest the predicted foreign aid plans for 2019 are reliable and accurate.

Human Development Index

The Human Development Index from 2019 is the third control variable. The effect of the HDI on democracy and STI prevalence is not as clear as GDP and Foreign Aid. This is because the relationship with HDI is less one-sided. We could argue that since HDI accounts for education and education has a strong relationship with democracy, HDI is associated with democracy. However, democracy, due to its focus on welfare, can affect HDI in return. Democratic policies will inevitably increase HDI. In this sense we can see HDI as a control variable, but also as a result of democracy.

HDI does clearly affect STI prevalence, as HDI measures education. Education platforms plays a big role in providing sex education, which is strongly associated with decreased STI rates (Vivancos et al., 2013, p. 54).

The HDI is taken from the UNDP Human Development Report (2024 [dataset]) after processing by Our World in Data. As the data is from the UN, which is generally considered to be a reliable source, this one was chosen. There was only one case for which data of 2019 was missing, which is Somalia. Due to the civil war taking place there, adding the 2022 data might not be accurate, this case is therefore taken out. All the other cases were rounded to two decimals and added to the dataset. The Human Development Index measures multiple indicators, life expectancy, population health, education and living standard (Herre & Arriagada, 2023).

State Capacity

As the fourth and last control variable, State Capacity will be explained. In the same way that HDI is difficult to establish as a control variable, state capacity has this problem as well. State capacity can be argued to have an effect on democracy and STI prevalence, but democracy and state capacity are also intertwined. In case of high state capacity, it can be easier for the recognized authority to push forward the democratization process, as there is a more cohesive state. State capacity can thus influence democracy. Looking at the other side of this relationship, democracy also naturally has more state capacity as its political system increases legitimacy. This makes it easier to implement STI policies. State capacity, just like HDI, can thus be considered a control variable and an effect.

Between State capacity and STI prevalence, the relationship is more one-sided, which is needed for a control variable. The higher the competence of a state, the more likely policies get implemented (Lindvall & Teorell, 2016). For health care policies and the prevention of STIs, this means a greater chance at success.

The state capacity of 2019 is taken from V-Dem, with processing from Our World in Data (2024 [dataset]). The full name of this variable is the "Percentage of territory effectively controlled by government" (V-Dem, 2024 [dataset]). It looks at whether the government is recognized as the main authority, or whether its leadership is challenged by other countries or insurgent groups, among others. There is no missing data for this variable, which, in addition to the fact that V-Dem is considered to be a reliable source, is the reason for choosing this dataset.

The model

The assumptions of a linear regression, the independence of errors, multicollinearity, linearity, normal distribution of errors are not violated. The results of testing these assumptions can be found in appendix A. The assumption of heteroskedasticity is violated. Although not a severe case, for more reliable results I conducted the model with robust standard errors. These take into account the heteroskedasticity and adjust the standard errors so that they are not biased and thus more reliable. The assumption of outliers and influential cases is also violated. When excluding the two outliers, Comoros and Pakistan, we find that multiple control variables get statistically significant and some values change noticeably. These two cases are therefore also dropped, meaning the final regression is run with 63 cases.

There will be three different models, each holding constant different variables. By controlling for State capacity and HDI, the possible way in which they can affect the relationship between democracy and STI rate is taken away. To acknowledge the possible effects of State capacity and HDI, there will be an additional model, model 2, holding only GDP and Aid constant, which then allows for this effect. Model 3 holds all four control variables, GDP, Aid, HDI and State capacity constant, as all four can be argued to have an influence on both democracy and STI rate. By comparing model 2 to model 3, we can see whether there is a difference between treating State capacity and HDI as a control or an effect. The first model looks at the relationship between democracy and STI prevalence, without taking control variables into account.

Table 1. Linear regression analysis of average liberal democracy index on STI prevalence

	Model 1	**Model 2**	**Model 3**
(Constant)	20588.954***	19107.903***	15908.043
	(156.830)	(1651.513)	(8432.691)
Average democracy	347.374	-200.558	-2111.068
	(4563.743)	(5147.414)	(4681.132)
GDP		0.915	1.950**
		(0.544)	(0.715)
Foreign aid		-2.152	-4.716
		(8.810)	(8.637)
HDI			-37181.646**
			(13329.101)
State capacity			256.495**
			(75.392)
R^2	0.000	0.061	0.248
Adjusted R^2	-0.016	0.013	0.182
N	63	63	63

Note: unstandardized regression coefficients with robust standard errors between brackets

***p < 0.001, **p < 0.01, *p < 0.05

Results

A simple linear regression was used to test if the Average liberal democracy index from 2010 until 2019, significantly predicted STI prevalence in 2019 in 65 developing countries. In the three models, there are different results and implications, which will be discussed.

Model 1 looks at the basic correlation between democracy and STIs. As this relationship is insignificant, there is no relationship that can be established. The results are positive and insignificant (R^2 = 0.000, F(1, 62) = 347.374, p > 0.05). In other words, as liberal democracy increases by one index point, so does STI prevalence, with 347.374 cases per 100,000 per year. However, this is an incomplete result, since there are other factors which affect both democracy and STI prevalence.

In model 2 and model 3, which do take into account confounding variables, the results are also insignificant, but negative instead of positive. Due to the insignificance, the main interpretation is still of no result. Model 2, which holds GDP and Foreign aid constant, shows that a one index point increase in democracy leads to a decrease of STI by 200.558 cases per 100,00 per year (R^2 = 0.061, F(1, 62) = -200.558, p > 0.05). Model 3, which holds constant all four confounding variables, GDP, Foreign aid, HDI and State capacity, shows that an increase in democracy by one index point decreases STI rates by -2111.068 cases per 100,000 per year (R^2 = 0.248, F(1, 62) = -2111.068, p > 0.05).

Although these two models do better at interpreting the actual relationship between democracy and STI prevalence, as can also be seen in the increased R Squared values, the interpretation is still of no relationship. Between model 2 and model 3, it is difficult to say whether it is better to treat HDI and State capacity as a confounding variable or as an effect. As both results are negative and insignificant, the inclusion of different control variables does not cause a noticeable change. Whether HDI and State capacity affect Democracy and STI rate, or are a way in which Democracy affects STI rate cannot be determined. It could be that both theories are true, to an extent, which means HDI and State capacity are not solely an effect or control.

Due to the fact that we cannot establish a causal relationship between Democracy and STI prevalence based on these results, we cannot reject the null hypothesis that Democracy has no effect on STI prevalence. With the current research design, data, and controls, there thus seems to be no relationship. If there had been more data, for example, there could have been a different result. The current result does not necessarily have to mean that democracies do not promote the

flow of information, trust and welfare, as these specific relations have not been tested in this paper. It does, however, mean that there is no evidence of these translating into a decreased STI rate. Following the counter theory, it could be that the positive and negative effects of democracy neutralize the eventual relationship between the two. The more open nature of a democracy, protecting individual rights and focussing on welfare could be beneficial for the prevention of STIs, but could also promote riskier sexual relationships increasing STI prevalence. Based on the current results, this cannot be determined.

As was expected and theorized, Foreign aid and HDI are negatively related to STI prevalence. Foreign aid had an insignificant result and HDI had a significant result. The more Foreign aid a country receives per citizen and the more developed a country is, the lower the STI prevalence. Something that was not expected by the theory is that GDP and State capacity are positively related to STI prevalence. In other words, the higher the GDP and State capacity, the higher STI prevalence turned out to be. Both results are statistically significant as well.

Conclusion

This research paper has attempted to answer the research question, "What is the effect of democracy on STI prevalence in developing countries?". Following a linear regression with control variables, the results show that we cannot determine a relationship between democracy and STI prevalence. We can therefore not reject the null hypothesis.

Although the results show no relationship, that does not mean we can say that the theories linking democracy and STI rates do not exist. The increased flow of information in democracies with free press and media could still enable lobbying, easy access to information and interactive information sharing. Similarly, higher spending on healthcare and more trust in the government might still lead to better health outcomes. For some reason, these factors either do not lead to better STI preventive policies and treatment, or there are other factors at work which prevent democracy from having an effect. The counter theory that was explained in the theoretical framework could, for example, have a strong effect. If people in democracies really do tend to engage in more risky sexual relationships, this could cancel out the effects of improved STI policies in democracies.

The lack of significant results could be because there is simply no relationship or due to a counter effect, but it could also be due to the research design. Since we were only able to compare the democracy average of 2010 up until 2019 with the STI rate in 2019, we were not able to account

for intra-national changes in democracy and STI prevalence. A time-series analysis would therefore give us much more insight, but was simply not feasible for this research project. For future research, this would be recommendable.

Something else that I was not able to do, but would give much clarity regarding the theories, is running separate regressions for each theory. Analysing the relationship between democracy and an indicator for each theory would show whether and to what extent democracy actually affects information, welfare and trust. These can then possibly be linked to STI prevalence. This takes more time and more regressions than I was able to do, but would be relevant for future research.

While a few cases had to be left out, we still managed to include the large majority of developing countries in this analysis. That means that this research is generalizable, not for all countries, but for developing countries. Even though the results showed no relationship, which was not expected, this paper is still a good start to bridge the research gap. As STIs in general are understudied, especially regarding different regimes, it was extremely interesting to conduct research on this potential relationship. It is also a good way to give way for future research possibilities.

Bibliography

Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2019). Democracy does cause growth. *Journal of political economy*, *127*(1), 47-100.

Achen, D., Fernandes, D., Kemigisha, E., Rukundo, G. Z., Nyakato, V. N., & Coene, G. (2023). Trends and challenges in Comprehensive Sex Education (CSE) research in Sub-Saharan Africa: a narrative review. *Current Sexual Health Reports*, 221-229.

Ağaçfidan, A., & Kohl, P. (1999). Sexually transmitted diseases (STDs) in the world. *FEMS Immunology & Medical Microbiology*, *24*(4), 431-435.

Alesina, A., & Dollar, D. (2000). Who gives foreign aid to whom and why?. *Journal of economic growth*, *5*, 33-63.

Aral, S., Over, M., Manhart, L., Holmes, K. (2006). Sexually transmitted infections. *Disease Control Priorities in Developing Countries*. PMID: 21250314.

Besley, T., & Kudamatsu, M. (2006). Health and democracy. *American economic review*, *96*(2), 313-318.

Blum, J., Dorn, F., & Heuer, A. (2021). Political institutions and health expenditure. *International Tax and Public Finance*, *28*(2), 323-363.

Boese-Schlosser, V., Bayerlein, M., Gates, S., Kamin, K., & Murshed, S. M. (2023). Trust issues? How being socialised in an autocracy shapes vaccine uptake. *WZB Discussion Paper*. 1-28.

Brezzi, M., et al. (2021). An updated OECD framework on drivers of trust in public institutions to meet current and future challenges, OECD Working Papers on Public Governance, No. 48, OECD Publishing, 1-60. https://doi.org/10.1787/b6c5478c-en

Brown, S. (2005). Foreign aid and democracy promotion: lessons from Africa. *The European journal of development research*, *17*, 179-198.

Chang, C. C., & Lin, T. H. (2020). Autocracy login: internet censorship and civil society in the digital age. *Democratization*, *27*(5), 874-895.

Coppedge, M., Gerring, J., Knutsen, C., Lindberg, S., Teorell, J., Altman, D., Angiolillo, F., Bernhard, M., Borella, C., Cornell, A., Fish, S., Fox, L., Gastaldi, L., Gjerløw, H., Glynn, A., Good God, A., Grahn, S., Hicken, A., Kinzelbach, K., Krusell, J., Marquardt, K., McMann, K., Mechkova, V., Medzihorsky, J., Natsika, N., Neundorf, A., Paxton, P., Pemstein, D., Pernes, J., Ryden, O., von Römer, J., Seim, B., Sigman, R., Skaaning, S., Staton, J., Sundström, A., Tzelgov, E., Wang, Y., Wig, T., Wilson, S., and Ziblatt, D. 2024. "V-Dem [Country-Year/Country-Date] Dataset v14" Varieties of Democracy (V-Dem) Project. https://doi.org/10.23696/mcwt-fr58.

Coppedge, M., Gerring, J., Knutsen, C., Lindberg, S., Teorell, J., Altman, D., Angiolillo, F., Bernhard, M., Borella, C., Cornell, A., Fish, S., Fox, L., Gastaldi, L., Gjerløw, H., Glynn, A., Good God, A., Grahn, S., Hicken, A., Kinzelbach, K., Marquardt, K., McMann, K., Mechkova, V., Neundorf, A., Paxton, P., Pemstein, D., Rydén, O., von Römer, J., Seim, B., Sigman, R., Skaaning, S., Staton, J., Sundström, A., Tzelgov, E., Uberti, L., Wang, Y., Wig, T., and Ziblatt, D. 2024. "V-Dem Codebook v14" Varieties of Democracy (V-Dem) Project.

Daher, J., Vijh, R., Linthwaite, B., Dave, S., Kim, J., Dheda, K., Peter, T., & Pai, N. P. (2017). Do digital innovations for HIV and sexually transmitted infections work? Results from a systematic review (1996-2017). *BMJ open*, *7*(11), 1-11.

Dahl, R. A. (2008). Polyarchy: participation and opposition. *Yale university press.*

"Data Page: Human Development Index", part of the following publication: Bastian Herre and Pablo Arriagada (2023) - "The Human Development Index and related indices: what they are

and what we can learn from them". Data adapted from UNDP, Human Development Report. Retrieved from https://ourworldindata.org/grapher/human-development-index [online resource]

"Data Page: STD Rates by Country 2024", part of the following publication: World Population Review (2024) - "STD Rates by Country 2024". Data adapted from the Global Health Observatory, World Health Organization. Retrieved from https://worldpopulationreview.com/country-rankings/std-rates-by-country [online resource]

Donnelly, J. (1999). Human rights, democracy, and development. *Human Rights Quarterly*, *21*(3), 608-632.

Dror, Y. (1999). Transparency and openness of quality democracy. *Openness and transparency in governance: Challenges and opportunities*, 62-71.

Escribà-Folch, A. (2013). Repression, political threats, and survival under autocracy. *International Political Science Review*, *34*(5), 543-560.

Fleck, R. K., & Hanssen, F. A. (2006). The origins of democracy: a model with application to ancient Greece. *The Journal of Law and Economics*, *49*(1), 115-146.

Foreign, Commonwealth & Development Office, UK Government. (2023). Understanding institutional analysis. Retrieved from: https://www.gov.uk/government/publications/understanding-institutional-analysis/understanding-institutional-analysis#fn:1

Fox, J. (2007). Do democracies have separation of religion and state?. *Canadian Journal of Political Science/Revue canadienne de science politique*, *40*(1), 1-25.

GDP per capita (current US$), World Bank national accounts data, and OECD National Accounts data files, Folder ID NY.GDP.PCAP.CD, World Bank Group Archives, Washington, D.C., United States. Retrieved from

https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2023&start=2023&view=map [online resource]

Gilliam, M., Chor, J., & Hill, B. (2014). Digital media and sexually transmitted infections. *Current Opinion in Obstetrics and Gynecology*, *26*(5), 381-385.

Gringras, A. M. (2012). Access to information: an asset for democracy or ammunition for political conflict, or both?. *Canadian Public Administration*, *55*(2), 221-246.

Glaeser, E. L., & Steinberg, B. M. (2018). Transforming cities: does urbanization promote democratic change?. *Transitions in Regional Economic Development*, 103-122.

Glewwe, P., & Muralidharan, K. (2016). Improving education outcomes in developing countries: evidence, knowledge gaps, and policy implications. *Handbook of the Economics of Education*, *5*, 653-743

Grant, M. J., & Behrman, J. R. (2010). Gender gaps in educational attainment in less developed countries. *Population and development review*, *36*(1), 71-89.

Hollyer, J. R., Rosendorff, B. P., & Vreeland, J. R. (2011). Democracy and transparency. *The Journal of Politics*, *73*(4), 1191-1205.

Humanitarian aid per capita (OECD and UN, 2018) – processed by Our World in Data. "Aid received per capita" [dataset]. Humanitarian aid per capita (OECD and UN, 2018) [original data]. Retrieved from https://ourworldindata.org/grapher/aid-received-per-capita [online resource]

Human Rights Watch. (2018, December 11). *No Support: Russia's "Gay Propaganda" Law Imperils LGBT Youth*. Retrieved from https://www.hrw.org/report/2018/12/12/no-support/russias-gay-propaganda-law-imperils-lgbt-youth

Justesen, M. K. (2012). Democracy, dictatorship, and disease: political regimes and HIV/AIDS. *European Journal of Political Economy*, *28*(3), 373-389.

Kersting, E., & Kilby, C. (2014). Aid and democracy redux. *European Economic Review*, *67*, 125-143.

Kinghorn, G. R. (2001). Passion, stigma, and STI. *Sexually transmitted infections*, *77*(5), 370-375.

Kreft, A. K. (2020). Civil society perspectives on sexual violence in conflict: patriarchy and war strategy in Colombia. *International Affairs*, *96*(2), 457-478.

Lieberman, E. S. (2007). Ethnic politics, risk, and policy-making: a cross-national statistical analysis of government responses to HIV/AIDS. *Comparative political studies*, *40*(12), 1407-1432. DOI: 10.1177/0010414007306862

Lindvall, J., & Teorell, J. (2016). State capacity as power: a conceptual framework. *Department of Political Science, Lund University*, *2016*(1)

Londregan, J. B., & Poole, K. T. (1996). Does high income promote democracy?. *World politics*, 49(1), 1-30.

Low, N., Broutet, N., Adu-Sarkodie, Y., Barton, P., Hossain, M., & Hawkes, S. (2006). Global control of sexually transmitted infections. *The Lancet*, *368*(9551), 1960-1961.

Manning, R. (2002). HIV/AIDS and democracy: what do we know?. *HIV/AIDS, Economics and Governance in South Africa: Key Issues in Understanding Response*, *21*, 1-164.

Maskileyson, D. (2014). Healthcare system and the wealth–health gradient: a comparative study of older populations in six countries. *Social Science & Medicine*, *119*, 18-26.

Mayaud, P., & Mabey, D. (2004). Approaches to the control of sexually transmitted infections in developing countries: old problems and modern challenges. *Sexually transmitted infections*, *80*(3), 174-182.

National Coalition of STD Directors. (2024, January 30). *Out-of-control STI epidemic continues to put lives at risk.* Retrieved from: https://www.ncsddc.org/out-of-control-sti-epidemic-continues-to-put-lives-at-risk/

Newsweek. (2023, February 21). *Putin Makes Questionable Claims in Major Speech.* Retrieved from: https://www.newsweek.com/putin-questionable-claims-state-nation-speech-1782764

Olsen, J. P. (2017). Democratic accountability and the terms of political order. *European Political Science Review*, *9*(4), 519-537.

Patterson, A., & Veenstra, G. (2016). Politics and population health: testing the impact of electoral democracy. *Health & place*, *40*, 66-75.

Peeling, R., Holmes, K., Mabey, D., & Ronald, A. (2006). Rapid tests for sexually transmitted infections (STIs): the way forward. *Sexually transmitted infections*, *82*(5), 1-6.

Pemstein, D., Kyle M., Eitan T., Yi-ting W., Juraj M., Joshua K., Farhad M., & Von Römer, J. (2024). "The V-Dem Measurement Model: Latent Variable Analysis for Cross-National and Cross-Temporal Expert-Coded Data". V-Dem Working Paper No. 21. 9th edition. University of Gothenburg: Varieties of Democracy Institute.

Piot, P. (2007). STIs and HIV: learning from each other for the long-term response?. *In a speech for the annual meeting of the International Society for Sexually Transmitted Diseases Research*, *29*.

Pritchett, L., & Summers, L. H. (1993). Wealthier is healthier. *World Bank Publications*, *1150,* 1-43

Ramchandani, M. S., & Golden, M. R. (2019). Confronting rising STIs in the era of PrEP and treatment as prevention. *Current HIV/AIDS Reports*, *16*, 244-256.

Rød, E. G., & Weidmann, N. B. (2015). Empowering activists or autocrats? The internet in authoritarian regimes. *Journal of Peace Research*, *52*(3), 338-351.

Rosenberger, L., & Gorman, L. (2020). How democracies can win the information contest. *The Washington Quarterly*, *43*(2), 75-96.

Royer, H. R., & Cerf, C. (2009). Young women's beliefs about the terms sexually transmitted disease and sexually transmitted infection. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *38*(6), 686-692.

Ruger, J. P. (2005). Democracy and health. *Qjm*, *98*(4), 299-304.

Safaei, J. (2006). Is democracy good for health?. *International journal of health services*, *36*(4), 767-786

Shao, S., & Shao, Y. (2023). From a deadly disease to a manageable chronic disease, HIV/AIDS remains a challenge for mankind. *Infectious Microbes & Diseases*, *5*(2), 41-43.

Sharma, A. (2021). The influence of patriarchy on women's health. *A Dissertation in Public Health.* 1-167.

Thomas, J. C., Eng, E., Earp, J. A., & Ellis, H. (2001). Trust and collaboration in the prevention of sexually transmitted diseases. *Public Health Reports*, *116*(6), 540-547

UN Aids. (2024, March 13). *HIV Prevention: From Crisis to Opportunity*. Retrieved from: https://www.unaids.org/en/keywords/condoms

UNDP, Human Development Report (2024) – with minor processing by Our World in Data. "Human Development Index" [dataset]. UNDP, Human Development Report, "Human Development Report 2023-2024" [original data]. Retrieved November 20, 2024 from https://ourworldindata.org/grapher/human-development-index

Unemo, M., Bradshaw, C. S., Hocking, J. S., de Vries, H. J., Francis, S. C., Mabey, D. & Fairley, C. K. (2017). Sexually transmitted infections: challenges ahead. *The Lancet infectious diseases*, *17*(8), 235-279.

Uslaner, E. M. (2003). Trust, democracy and governance: can government policies influence generalized trust?. In generating social capital: civil society and institutions in comparative perspective. *New York: Palgrave Macmillan US*, 171-190

V-Dem (2024) – processed by Our World in Data. "Liberal democracy index – (best estimate, aggregate: average)" [dataset]. V-Dem, "V-Dem Country-Year (Full + Others) v14" [original data]. Retrieved November 19, 2024 from https://ourworldindata.org/grapher/liberal-democracy-index

V-Dem (2024) – processed by Our World in Data. "Territory under state control – (best estimate, aggregate: average)" [dataset]. V-Dem, "V-Dem Country-Year (Full + Others) v14" [original data]. Retrieved from https://ourworldindata.org/state-capacity [online resource]

Vivancos, R., Abubakar, I., Phillips-Howard, P., & Hunter, P. R. (2013). School-based sex education is associated with reduced risky sexual behaviour and sexually transmitted infections in young adults. *Public Health*, *127*(1), 53-57.

Waldner, D., & Lust, E. (2018). Unwelcome change: coming to terms with democratic backsliding. *Annual Review of Political Science*, *21*(1), 93-113.

Warren, M. (2018). Trust and democracy. *The Oxford handbook of social and political trust*, 75-94.

WHO Global Health Observatory (2024) - processed by World Population Review. "STD Rates by Country 2024" - [dataset]. Retrieved from https://worldpopulationreview.com/country-rankings/std-rates-by-country [online resource].

World Health Organization. (2024, May 21). *New report flags major increase in sexually transmitted infections, amidst challenges in HIV and hepatitis.* Retrieved from https://www.who.int/news/item/21-05-2024-new-report-flags-major-increase-in-sexually-transmitted-infections---amidst-challenges-in-hiv-and-hepatitis

World Health Organization. (2024, May 21). *Sexually transmitted infections (STIs).* Retrieved from: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)

Xu, X., & Jin, X. (2018). The autocratic roots of social distrust. *Journal of Comparative Economics*, *46*(1), 362-380.

Appendix A.

Assumptions linear regression

Independence of errors:

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.435[a]	.190	.121	5705.88735	2.258

a. Predictors: (Constant), State Capacity 2019, Gross Domestic Product 2019, Average Liberal Democracy Index 2010-2019, Aid received per citizen 2019, Human Development Index 2019

b. Dependent Variable: STI prevalence per 100.000 2019

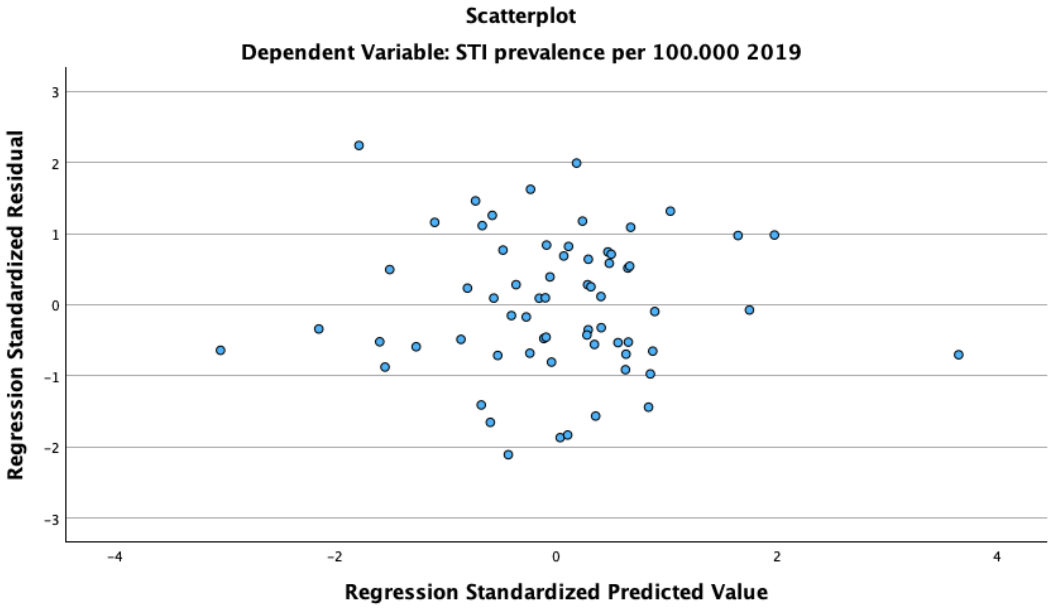
Multicollinearity:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	17259.749	7764.565		2.223	.030		
	Average Liberal Democracy Index 2010-2019	-2522.536	4880.360	-.069	-.517	.607	.763	1.310
	Gross Domestic Product 2019	1.847	.638	.473	2.895	.005	.515	1.943
	Aid received per citizen 2019	-1.534	11.930	-.017	-.129	.898	.760	1.315
	Human Development Index 2019	-32853.122	13160.734	-.434	-2.496	.015	.455	2.200
	State Capacity 2019	215.411	82.760	.346	2.603	.012	.779	1.283

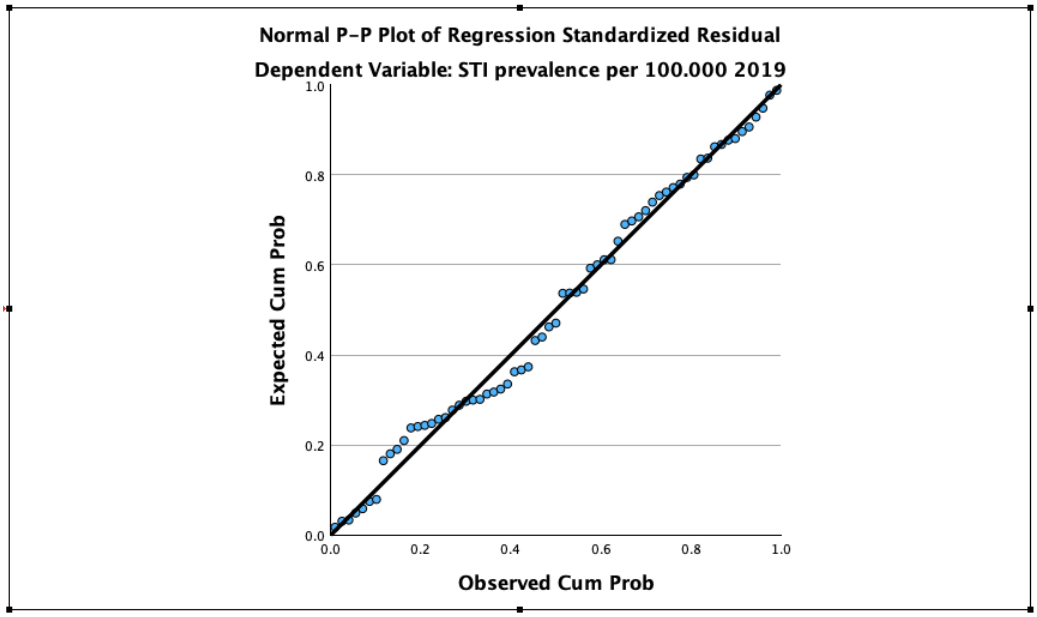
a. Dependent Variable: STI prevalence per 100.000 2019

Linearity and Heteroscedasticity:



Normal distribution of errors:

Charts



Outliers and influential cases:

Casewise Diagnostics[a]

Case Number	Std. Residual	STI prevalence per 100.000 2019	Predicted Value	Residual
13	2.242	28663.75	15869.2321	12794.51786
50	-2.109	7421.04	19455.6118	-12034.5718

a. Dependent Variable: STI prevalence per 100.000 2019

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12542.6104	30273.8301	20608.1306	2650.23852	65
Std. Predicted Value	-3.043	3.647	.000	1.000	65
Standard Error of Predicted Value	861.874	3377.133	1639.883	566.567	65
Adjusted Predicted Value	14043.1045	32213.8730	20688.6703	2712.98257	65
Residual	-12034.5713	12794.51758	.00000	5478.46905	65
Std. Residual	-2.109	2.242	.000	.960	65
Stud. Residual	-2.138	2.344	-.006	1.004	65
Deleted Residual	-12367.3779	13976.59082	-80.53970	6002.60150	65
Stud. Deleted Residual	-2.207	2.440	-.006	1.018	65
Mahal. Distance	.476	21.435	4.923	4.475	65
Cook's Distance	.000	.085	.016	.021	65
Centered Leverage Value	.007	.335	.077	.070	65

a. Dependent Variable: STI prevalence per 100.000 2019

Calculating robust standard errors due to heteroskedasticity

Parameter Estimates with Robust Standard Errors

Dependent Variable: STI prevalence per 100.000 2019

Parameter	B	Robust Std. Error[a]	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	15908.043	8432.691	1.886	.064	-978.129	32794.215
LDI10years	-2111.068	4681.132	-.451	.654	-11484.873	7262.736
GDP2019	1.950	.715	2.728	.008	.519	3.382
Aid2019	-4.716	8.637	-.546	.587	-22.010	12.578
HDI2019	-37181.646	13329.101	-2.790	.007	-63872.711	-10490.581
Statecap2019	256.495	75.392	3.402	.001	105.526	407.464

a. HC3 method