

The Honors College at the University of Missouri-Kansas City

The Future of STIs in Missouri: A Mixed-Methods Analysis of Cape Girardeau County

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**Abstract**

Sexually transmitted infections (STIs) continue to be a problem in the United States, the state of Missouri, and Cape Girardeau County alike. Cape Girardeau County, located in the southeast corner of Missouri, is a unique area. With a population of 78,753 as of 2018, Cape County is mid-sized county. Still, the County faces unique problems that other counties within the state do not, like interstate corridors and a University, alongside problems shared by every county in Missouri, like sex education restrictions and funding. The county has also faced a general upwards trend in STI cases from 2008-2017. Each year, the county saw a percent increase in new cases of chlamydia, gonorrhea, and syphilis. These rates can be linked to increasing populations, population movement, drug use, and lack of education regarding safe sex. Changing these rates towards a downward trend and eventual disease eradication will improve the state of healthcare as well as the health and wealth of all Cape Girardeau residents. Between a statistical analysis, review of current literature, and an interview with a County Health Department official, I highlighted the problems and possible solution for the area. As the county moves forward, changes must be made to needle-exchange programs and sex education methods within the county to improve the health of all.

## **I. The Problem**

### **a. The Upwards and Dangerous Trend of STIs**

The United States has been facing increasing rates of STIs for many years. Common STIs like chlamydia, gonorrhea, HPV, and HIV are bacteria or viruses spread person-to-person through sexual contact with an infected individual (“Sexually Transmitted Diseases”, 2014). A focus will be put on chlamydia, gonorrhea, syphilis, and HIV/AIDS. From 2014-2018, the United States saw a 19.4%, 63.1%, 71.4% increase in chlamydia, gonorrhea, and syphilis, respectively (“Chlamydia”, 2019; “Gonorrhea”, 2019; “Syphilis”, 2019). The Midwest from 2014-2018, saw a 17.1%, 79.9%, and 16.4% increase in chlamydia, syphilis, and gonorrhea cases, respectively. These increased rates have been attributed to improvements in screening, diagnostic tests, and reporting as well as increases in overall incidence (“Chlamydia”, 2019; “Gonorrhea”, 2019; “Syphilis”, 2019). This means, it is thought that chlamydia cases are increasing as well as the capabilities to find and detect them when present. Still, even when accounting for better screening and diagnostic abilities, these rates are rising at substantial and severe percentages.

Chlamydia, gonorrhea, and syphilis cases, when left unscreened and untreated, can detrimentally affect reproductive health, particularly in women, most commonly in the form of pelvic inflammatory disease (PID), and even neurological function in men and women, seen in late-stage, untreated syphilis infections (“Sexually Transmitted Diseases”, 2014). Gonorrhea imposes issues individual to its infection in the form of multi-drug resistant (MDR) and extensively-drug resistant (XDR) strains (Alirol et al, 2017). The vast majority of antibiotic classes capable of treating gonorrhea infections have lost their abilities to completely treat infections alone. This has increased the need to use a combination of prescription antibiotics,

where in the past, a single dose of one drug was sufficient to clear gonorrheal infection (Alirol et al, 2017). Should previously reliable antibiotics fail to treat MDR and XDR gonococcal infection, even when combined, the infected individual has the potential to succumb to sepsis, if and when the bacterial agent proliferates and enters the bloodstream (Alirol et al, 2017). This can and will increase more negative outcomes associated with STIs, as well as increase associated costs.

As STIs are continuing to change and rates are continuing to increase, the cost associated with STIs is expected to increase. Currently, it is estimated that in 2010 US dollars, \$16.9 billion is spent on managing STIs, with a range of \$13.9- \$23.0 billion (Chesson et al, 2011). Currently, it is unknown exactly how much is spent in Missouri for the prevention, screening, and treatment of STIs. But in 2016, the CDC provided \$6.8 million in funding for HIV/AIDS prevention and almost \$2.2 million for STI case reduction and prevention (“Missouri-State Health Profile”).

The state of Missouri was one of the first to begin noticing and tracking drug-resistant microbe cases. There is a sentinel site to track cases of MDR and XDR gonorrhea infections in Kansas City, Missouri as a part of the Gonococcal Isolate Surveillance Project. It is important to note that this tracking program and site has been active since 1986, meaning the drug-resistant strains have been in existence and adapting for almost 40 years (“Gonococcal Isolate Surveillance Project”, 2020). Further, these potentially life-altering conditions stemming from STI strains highlight the need to screen and treat all infections, especially as numbers increase. Additionally, increases in funding sent by the CDC to the state of Missouri highlight the mission to treat all existing cases and prevent future occurrences of all STIs. And, even more importantly, prevent as many cases as possible from occurring to slow the spread and development of drug-resistant strains.

### **b. Growth of Cape Girardeau County**

Cape Girardeau City, within the county, is a growing area and was recognized as a newly urbanized areas by the US Census Bureau in the 2010 census (“US Census Bureau Public Information Office”, 2016). This means the city has surpassed a population count of 50,000, accounting for the over 78,000 population of the county. As a county with a growing urban area, this physically introduces more people with potential to spread disease. An interview with a county health department official recognized the population growth as aiding the spread of STIs within the area (interview). The growing population includes people moving to the county and moving populations have been linked to the spread of communicable disease, like STIs (Norris et al, 2017).

The increased spread of STIs has been shown in recent data from the Missouri Department of Health and Senior Services (DHSS). From 2008 to 2017, the Cape Girardeau County population rose by 4,020 new residents (MOPHIMS). Chlamydia, gonorrhea, and syphilis cases rose by 76, 7, and 9 cases respectively. HIV prevalence cases, meaning those already infected with HIV, rose by 18 cases (MOPHIMS). Although this may seem to be small increases in each STI, every new STI case is accompanied by screening, testing, treatment, and check-up costs which can add up significantly as cases rise. This imposes an economic burden. A healthcare burden also exists as cases rise since more man-power and working hours are needed to provide adequate care for those with STIs.

### **c. Unique and Shared Challenges between the County and State**

Cape County is the largest county between Memphis and St. Louis, two large urban areas. The high-traffic I-55 corridor also runs directly through the county. Due to these two

logistical situations, Cape County sees a large amount of travel with those on the road within the state and moving towards out of the state. Cape County also borders the state of Illinois, separated by the Mississippi River, yielding more potential for regular travel into and out of the county and state for work, shopping, or school. This has been thought to exacerbate the spread of disease (interview). Cape Girardeau, the largest town within the county is also home to Southeast Missouri State University, also known as SEMO. SEMO, as of Fall 2020, had 8,929 undergraduate and 1,072 graduate students enrolled, with 77% of these students from Missouri (“Fast Facts”, 2020). Moving and migrating populations, such as college students moving for school, have been linked with increased risk of infectious disease, more specifically STIs. Further, it is estimated that adolescents and young adults acquire half of all new STI cases each year (“STDs in adolescents and young adults”, 2018).

Moving and young populations are only part of the puzzle affecting STIs in Cape Girardeau County. Missouri is known to have an extensive methamphetamine problem as the state has had the most meth lab seizures out of all 51 states and districts since 2001 (Calvert et al, 2014). Methamphetamine use is known to have many negative public health effects, like toxic waste production and dirty needle waste, reuse, and improper disposal from methamphetamine injectables and derivatives (Calvert et al, 2014, Topolski, 2007). Dirty needle sharing and reuse can increase risk of HIV and Hepatitis transmission and spread, among other STIs, between injectable methamphetamine and drug users (Topolski, 2007). County officials recognize that Cape Girardeau is not immune to the affliction and spread of disease from drug-use with dirty needles (interview).

Legislation as it exists today does not aid in the prevention of disease and reuse of dirty needles. Currently, under Missouri state law 579.074, possession of drug paraphernalia,

including needles, with intent to use to administer illicit drugs, is a class D misdemeanor that becomes a class E felony when in reference to methamphetamine or its analogues (“Statute 579.074”). This means that methamphetamine use with a needle and syringe have a more severe punishment than other illicit drug use. Further, this law makes it illegal for health organizations, like Health Departments or hospitals, to exchange dirty for clean needles. This may deter IV drug users from seeking out help, as the health department cannot legally provide aide and they may face a severe punishment if caught with meth or its paraphernalia.

Clean needle exchange programs have been linked to decreased HIV prevalence and healthcare spending imposed by HIV cases when implemented within a state (“Access to clean syringes”, 2016). In 2010, it was estimated that a single lifetime of HIV treatment totaled to \$379,668, most of which will be incurred by private insurance and Medicaid programs (“Access to clean syringes”, 2016). For example, in New York, from 1990-2002, after a clean needle exchange program was established, HIV prevalence dropped from 50% to 17% (“Access to clean syringes”, 2016). This massive decrease in HIV prevalence saves the healthcare system monumental amounts of money, improving not only the health but also the economy of the community. Currently, Cape Girardeau County Health Department has no program for proper needle disposal or a clean needle exchange. The only needle exchange in the state exists in Kansas City, Missouri which is over 5 hours away from Cape Girardeau by car and travels through the high-traffic I-55 corridor (McKean, 2015).

The drug methamphetamine is a stimulant. Because of this, meth use also exacerbates risky sex behaviors, like group sex with multiple partners as a result of increased libido. Group sex typically occurs without the proper use of condoms, especially if they are not present and available when the drug use and sexual behaviors start. Between increased risky and unprotected

sex alongside sharing dirty needles, people who use meth are predisposed towards increased risk of contracting an STI. Hepatitis, particularly Hep C, and HIV are considered the STIs with the highest risk associated, both with severe possible outcomes as well. Missouri and Cape Girardeau County are not immune to this problem and can improve outcomes when eliminating some of these risks (Topolski, 2007). This may be through free and consistently available condoms and clean needle exchanges.

#### **d. Unique and Shared Strengths between the County and State**

County Health Department accreditation is crucial to the infrastructure and public health of a community, especially in more rural areas like Cape Girardeau County (Beatty et al, 2015). County health department accreditation is optional in the state of Missouri and the accreditation process is overseen by the Missouri Institute for Community Health (MICH). Cape Girardeau County Health Department was first accredited in 2015 for five years by the MICH and was able to continue its accreditation in 2020 which will be good for another five years (Wolz, 2020). Cape Girardeau County is one of 14 counties in the state meeting the requirements for this distinction in 2020 (Wolz, 2020). Benefits of accreditation include: standards and guides that must be met to better serve the community, access to coalitions providing guidance, and research networks (“Accreditation Introduction Missouri Institute for community health,” 2021). It is important to note that this is a strength for Cape Girardeau County in the guidance, standards, and information the accreditation provides. Still, it can be a weakness since the accreditation is not required and many bordering counties are not accredited. This can lead to the continued proliferation of problems stopped or solved by accreditation and this can further bleed into the Cape Girardeau County from the bordering areas.



As previously discussed, dirty for clean needle exchanges are illegal in the state of Missouri. But, as of 2021, House Bill 650 seeks to change that. Should this bill become law, health care facilities registered with the Missouri Department of Health and Senior Services would be exempt from prosecution for illegal drug paraphernalia distribution in the form needles and syringes (HB 650, 2020). Cape Girardeau County has many facilities that could become registered and available to the public as a needle exchange site, like the Health Department facility, Southeast Hospital, and St. Francis Medical Center. It is important to note that under this bill, needle possession outside of the registered healthcare facility is still illegal, as well as illicit methamphetamine use of any kind. Altogether, this shows an awareness of the problem from lawmakers within the state of Missouri as well as a notable change that could occur by the end of 2021.

## **II. The Solution**

Cape Girardeau County, as well as the state of Missouri, is known to have a problem in the form of methamphetamine use and abuse. This often includes using injectable forms that require needles. There is only one site in the state, in Kansas City, MO, for clean needle exchange, meaning that oftentimes needles are reused and can spread disease like HIV and other STIs. Currently legislation exists to decriminalize needle exchange programs registered with the MDHSS within the state. As the Cape Girardeau County Health Department is already accredited by the governing body in Missouri, it may be easier to become a future clean needle disposal and change site. Of course, this contingent upon the bill becoming law in 2021. Currently, organizations like the North American Syringe Exchange Network exists to aid new and existing dirty needle exchange programs (“NASEN”). This network serves needle exchange sites by providing assistance, sponsorship, and even program support packages for programs in need

(“NASEN”). Should the Health Department become involved in needle exchange programs, what follows is a potential plan for the rollout.

- a) Complete registration through the Missouri Department of Health and Senior Services and receive approval
- b) Outline logistics of the program
  - a. *Site of disposal*: Within the Health Department Building, in the care and clinic area, under the supervision of a Registered Nurse to manage needle disposal containers.
  - b. *Hours of Exchange*: Monday 7:30a-4:30p and Tuesday through Friday 8:30a-4:30p during the regular business hours of the department.
    - i. If funding permits, it would be beneficial to have the exchange available 8a-12p on Saturdays to allow for those with conflicting schedules to participate as well.
  - c. *Staffing*: The exchange will always be under the care of a Registered Nurse or medical professional of equal or higher training level. All staff involved will be trained in accordance to America Red Cross Standards on bloodborne pathogen risk that can accompany needle-related injuries and county/state specific guidelines as given by the law once passed.
  - d. *Meeting and Agreement with Cape Girardeau Police Department*: Possession of a needle or syringe with intent to use with illicit drugs is still a misdemeanor in the state of Missouri and a felony with intent to use with methamphetamine. When the Health Department begins the needle exchange program, a drafted and agreed upon legal document is recommended to outline agreements that the CGPD is not

to increase patrol around the building or area or increase searches of cars coming to or leaving the health department. This would deter community members utilizing the new service and undermine efforts to improve the health of the community by the Health Department officials. But, the document will also exist to confirm transparency between the CGPD to ensure illicit drugs will not be handled or taken within the facility and that mandated reporters that observe any form of abuse will continue to report according to the law. This certifies the overall, continued safety of the community.

- c) *Provide future expansion plans:* Cape Girardeau County Health Department will always be the home site for the needle exchange program, but can plan for expansion sites within the area. Within Cape Girardeau City limits, two large hospitals exist: St. Francis Medical Center and Southeast Hospital. A partnership for clean needle exchange with these two hospitals can be forged. Both hospitals have pharmacies that could be sites for the needle exchange, under supervision of the pharmacist. These facilities are already equipped with supplies for sharps disposal and clean syringes and needles, lessening some logistical challenges. Hours of operation and amount of needles and syringes that can be exchanged can be decided upon by hospital and public health officials.

Cape Girardeau County currently does very low levels of sex education and disease prevention presentations within the K-12 and college-level classes. The public and private schools are currently compliant with statute 170.015 that requires education surrounding sexual health, like menstrual cycles and HIV/AIDS symptoms and outcomes (Cook, 2019). This statute also states outlines how and what to provide education upon regarding sex education, but gives an option to follow the federal guideline 42 U.S.C. Section 710 (Cook, 2019). This states that

schools may opt for abstinence only education, teaching that abstinence is the best and only truly protective form of sexual practices. Further it restricts and neglects education proper condom use, the various uses of birth control and hormonal medication, as well as other prevention tactics (Dworkin & Santenelli, 2007).

A new alternative for abstinence only education is abstinence-plus education. In this process, abstinence is taught as the only 100% effective prevention method for STIs and pregnancy, but it is followed with other prevention methods, like condom use, which are known to reduce the aforementioned risks as well (Dworkin & Santenelli, 2007). A distinguishing factor of abstinence-plus education is that it places abstinence at the top of the so-called “hierarchy” of prevention methods where comprehensive sex education may not (Dworkin & Santenelli, 2007). Abstinence-plus education has been linked to protective effects against unprotected sex, through either practice of abstinence or proper condom use. This education program is also known to have no effect on an increase of sex initiation and risk of HIV contraction (Trembley & Ling, 2005, Dworkin & Santenelli, 2007). Cape Girardeau County should consider adopting more education practices, particularly abstinence-plus programs. An outline for this adoption and integration follows.

- a) Meet with Public and Private middle, junior high, and high schools within the county to discuss and negotiate educational points and resources/products provided within the school buildings.
- b) Outline of Program Logistics
  - a. *Educational Programs*: In concordance with current laws, sexual health will continue to be taught accurately. The school systems will adopt a sexual education program consistent with terms and objectives outlined in Missouri

statute 170.015. This includes discussion over the emotions associated with sexual activity, sexual predation both online and in-person, and consent. The educational seminars will begin at age 12, within 5<sup>th</sup> grade, with age-appropriate language and topics. Seminars will continue every two years through 11<sup>th</sup> grade in which updated information will be provided to reflect the age level of the students. These presentations will be provided through licensed and certified health educators that travel the state.

- b. *Product Distribution*: Sexual health and safe sex are both dependent on access to proper products. For those that menstruate, this means access to feminine hygiene products, like pads and tampons. For those that are sexually active, this could mean access to safe sex products, like condoms and dental dams. Grants exist within the Cape Girardeau County Health Department that makes condoms free for anyone requesting them and available during business hours and within the clinic. A common practice is to have kits available upon request that may include condoms, dental dams, and lube, and have loose condoms available within bathrooms. It can be thought that the privacy associated with the bathroom environment, removes some stigma of taking condoms.
  - i. *Condom availability*: Condoms will be made available within the bathrooms of high school, and junior high/middle schools if permitted, free for the taking for students. Condoms and other safe sex products may also be kept with the school nurse, along with educational pamphlets and information.

- ii. *Feminine hygiene availability*: Feminine hygiene products are instrumental to good health in young people, especially as some begin to menstruate. Although they are currently available within schools, they will be free and available within all unisex, gender neutral, and women's restrooms within the school. These products may be made available through donations by stores, parents, community members, school district employees, or through grant funding.

## **Conclusion**

STIs continue to affect the United States, Missouri, and Cape Girardeau County. As rates continue to increase, exacerbating the burden on healthcare, legislation, and Health Departments, changes must occur to combat the problem. Cape Girardeau already has many strengths. These include free condoms in their facility, STI testing every week, and an accreditation for their Health Department. But, this county has weaknesses as well, some even being unavoidable but capable of improvement. With the county containing a college, and sometimes a self-proclaimed college town, a young and transient population filters in and out of the county throughout the year. This can be associated with the spread of communicable disease, especially STIs.

As MDR and XDR strains of gonorrhea spread throughout the state, preventing new cases is paramount as treatment becomes more difficult and less reliable. Currently, legislation is at odds with preventing STIs in various ways. Statutes surrounding sex education of Missouri school-age children extensively outline valuable information to give students regarding sex and sex education, but include a clause making it all optional. This legislation should be re-written to allow students to learn about sex, protection, the emotional side of sexual intimacy, and predatory behaviors, regardless of the school's feelings towards the education. Through this,

young adults will be able to make educated decisions about their intimate lives and be able to protect themselves as needed when needed.

The state and county also faces problems of drug-use, usually in the form of methamphetamine use and IV drugs. Not only is this associated with risky sex behaviors, but reusing dirty needles can encourage the spread of disease like HIV and Hepatitis C. Legislation also makes clean needle exchanges illegal in the state. Clean needle exchanges have been linked to preventing the spread of disease, especially HIV and Hepatitis C. Although the state of Missouri is debating legalizing clean needle exchanges, with some contingencies, little has been defined in the form of guidance for disposal sites. A plan for Cape Girardeau County Health Department has been outlined previously as well. This can function as a working start and valuable asset to the County Health Department.

An interview with the Health Department official along with literature review of current problems, and statistical analysis of the STI disease state show many strengths and weaknesses within Cape Girardeau County. Although the County Health Department does valuable work and serves the community well through many resources, improvements and alterations can be made at the county level as guided through state and potentially national-level legislation. Through this, the burden of STIs through prevention, testing, treatment, tracing, public health, the economy, and healthcare overall can be lessened and the health and wealth of all Cape Girardeau County inhabitants improved.





## Resources

Access to clean syringes. (2016, August 05). Retrieved January, 2021, from

<https://www.cdc.gov/policy/hst/hi5/cleansyringes/index.html>

Accreditation Introduction Missouri Institute for community health. (2021). Retrieved February, 2021, from [https://michweb.org/accreditation-introduction/#:~:text=The%20Missouri%20Institute%20for%20Community%20Health%20\(MICH\)%20is,representatives%20of%20academia,%20and%20state%20and%20local%20government.](https://michweb.org/accreditation-introduction/#:~:text=The%20Missouri%20Institute%20for%20Community%20Health%20(MICH)%20is,representatives%20of%20academia,%20and%20state%20and%20local%20government.)

Alirol, E., Wi, T. E., Bala, M., Bazzo, M. L., Chen, X., Deal, C., . . . Balasegaram, M. (2017). Multidrug-resistant gonorrhea: A research and development roadmap to discover new medicines. *PLOS Medicine*, *14*(7). doi:10.1371/journal.pmed.1002366

Beatty, K. E., Mayer, J., Elliott, M., Brownson, R. C., & Wojciehowski, K. (2015). Patterns and predictors of local health Department accreditation in Missouri. *Journal of Public Health Management and Practice*, *21*(2), 116-125. doi:10.1097/phh.0000000000000089

Chesson, H. W., Gift, T. L., Owusu-Edusei, K., Tao, G., Johnson, A. P., & Kent, C. K. (2011). A brief review of the estimated economic burden of sexually transmitted diseases in the United States: inflation-adjusted updates of previously published Cost studies. *Sexually Transmitted Diseases*, *38*(10), 889-891. doi:10.1097/olq.0b013e318223be77

Chlamydia - 2018 Sexually Transmitted Diseases Surveillance. (2019, September 30). Retrieved 2021, from <https://www.cdc.gov/std/stats18/chlamydia.htm>

Cook, M. (2019). Missouri Sex Education Policy: Recommendations for revision to reduce teen pregnancy rates. *Sexuality Research and Social Policy*, 17(4), 668-674.

doi:10.1007/s13178-019-00424-x

Dworkin, S. L., & Santelli, J. (2007). Do Abstinence-plus Interventions reduce sexual risk behavior among Youth? *PLoS Medicine*, 4(9). doi:10.1371/journal.pmed.0040276

Fast Facts 2020. (2021, October 7). Retrieved February, 2021, from

<https://www.semo.edu/ir/facts.html>

Gonococcal Isolate Surveillance Project (GISP). (2020, July 29). Retrieved January, 2021, from

<https://www.cdc.gov/std/gisp/default.htm>

Gonorrhea - 2018 Sexually Transmitted Diseases Surveillance. (2019, July 30). Retrieved 2021,

from <https://www.cdc.gov/std/stats18/gonorrhea.htm>

HB 650, 101st General Assembly Cong. (2020).

McKean, M. (2015, March 31). Kansas city needle exchange program sees 350 clients monthly.

Retrieved January, 2021, from <https://fox4kc.com/health/kansas-city-needle-exchange-program-sees-350-clients-monthly/>

Missouri-State Health Profile. (n.d.). Retrieved 2021, from

[https://www.cdc.gov/nchhstp/stateprofiles/pdf/missouri\\_profile.pdf](https://www.cdc.gov/nchhstp/stateprofiles/pdf/missouri_profile.pdf)

MOPHIMS - Population MICA. (n.d.). Retrieved February 22, 2021, from

<https://healthapps.dhss.mo.gov/MoPhims/QueryBuilder?qbc=PNM&q=1&m=1>

Nasen. (n.d.). NASEN. Retrieved January, 2021, from <https://www.nasen.org/>

Norris, A. H., Loewenberg Weisband, Y., Wiles, M., & Idkovics, J. R. (2017). Prevalence of sexually transmitted infections among Tanzanian migrants: A cross-sectional study.

*International Journal of STD and AIDS*, 28. doi:10.1177/0956462416685486

Sexually transmitted diseases. (2014). Retrieved January, 2021, from

<https://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases>

Statute 579.074. (n.d.). Retrieved January, 2021, from

<https://revisor.mo.gov/main/OneSection.aspx?section=579.074>

STDs in adolescents and young adults - 2017 sexually transmitted diseases surveillance. (2018, July 24). Retrieved February, 2021, from

<https://www.cdc.gov/std/stats17/adolescents.htm#ref1>

Syphilis - 2018 Sexually Transmitted Diseases Surveillance. (2019, October 01). Retrieved 2021, from <https://www.cdc.gov/std/stats18/Syphilis.htm>

Topolski, J. M. (2007). Epidemiology of Methamphetamine Abuse in Missouri. *Missouri*

*Medicine*, 104, 82-88. Retrieved 2021, from [https://www.researchgate.net/profile/James-Topolski/publication/6410839\\_Epidemiology\\_of\\_methamphetamine\\_abuse\\_in\\_Missouri/links/02e7e51c4abb6238ca000000/Epidemiology-of-methamphetamine-abuse-in-Missouri.pdf](https://www.researchgate.net/profile/James-Topolski/publication/6410839_Epidemiology_of_methamphetamine_abuse_in_Missouri/links/02e7e51c4abb6238ca000000/Epidemiology-of-methamphetamine-abuse-in-Missouri.pdf)

Tremblay, C. H., & Ling, D. C. (2005). AIDS education, Condom demand, and the sexual

activity of American youth. *Health Economics*, 14(8), 851-867. doi:10.1002/hec.989

US Census Bureau Public Information Office. (2016, May 19). Growth in urban population outpaces rest of nation, Census Bureau reports - 2010 census - newsroom - U.S. Census Bureau. Retrieved January, 2021, from [https://www.census.gov/newsroom/releases/archives/2010\\_census/cb12-50.html](https://www.census.gov/newsroom/releases/archives/2010_census/cb12-50.html)

Volkerding, J. (2020, April 28). Interview with Cape Girardeau County Health Department [Telephone interview].

Wolz, J. (2020, January 30). Cape County health center reaccredited. *Southeast Missourian*. Retrieved February, 2021, from <https://www.semissourian.com/story/2665173.html>