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# *Association between Contraceptive Use Change and Demographic and Socioeconomic Factors in 2011-2019 United States: A Regression Analysis*

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***Abstract:*** General contraceptive adoption has been shown to increase in the past decades. Although factors associated with contraceptive use have been studied in the past, few have looked into how such factors changed over time, especially in a developed country like the United States. This study uses four female response datasets from 2011-2013, 2013-2015, 2015-2017, and 2017-2019. Data were collected by the National Survey of Family Growth (NSFG). A total of 20 variables were selected using a step-up approach based on literature review and reviewing missing rates. Multivariate logistic regression was conducted, accompanied by a step-down Akaike information criterion (AIC) model and the Hosmer Lemeshow test. This study indicates that "age," "race," and "pregnancy" are the top three most frequently associated variables among the eight contraceptive methods analyzed. A general shift in associations with income and drinking was also observed across most contraceptive methods, while factors such as "highest degree" have become less associated. Results indicate that improving sexual education in the US has played an increasingly predominant role in contraceptive choices.

***Keywords:*** contraception use, change, socioeconomic factors, demographic factors

## 1. Introduction

In the past decades, the world population has experienced significant growth. [4] as more people are now living to the age of reproduction, pervasiveness in sex education has allowed the adoption of contraceptives to gradually increase worldwide, especially in developing countries [1-5]. Contraceptives, as a method of family planning, play an essential role in safely preventing unintended pregnancies. It can be separated mainly into traditional methods such as rhythm, coitus interruptus, fork, and modern methods. Such as condoms, intrauterine devices (IUD), and hormonal implants [6]. A slow but steady decline was observed with most traditional contraceptive methods. However, with the rising usage of contraception in less developed countries, especially in sub-Saharan Africa, the prevalence of modern contraceptives such as progesterone implants, progesterone injectables, and male condoms has increased significantly [1]. This is also partially due to technological advancements as newer methods such as implants and IUDs matured [7]. Such methods have proved to be safer for the user, longer lasting, and more effective at preventing pregnancy [7].

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Previous trend projections have proved to be primarily accurate [5,8]. A rise was observed in overall contraception adoption, with the most evident increase being from less developed countries in parts of Asia and Africa, where rates of unmet contraceptive needs are declining. Not only are modern contraceptives becoming increasingly prevalent, but a general favor for hormonal contraceptives and non-permanent methods compared to permanent methods such as sterilization also became apparent [1]. Multiple studies have found a general increase in contraceptive adoption and newer contraceptive method usage, especially in developed countries [1,5]. Although specific choices of contraception methods do vary with country, a fifth of countries worldwide have adopted a predominant method of contraception accounting for over 50% of their choices [1,5]. Overall, Condoms and female sterilization continue to be the most widespread globally, followed by IUDs and pills [1,5].

Previous studies have some recognizable limitations. Firstly, analysis of contraceptive trends tends to focus on developing countries where changes are the most evident, with relatively few developed countries [9-11]. Secondly, studies in the past decade focused on contraception usage in a single year or use of non-continuous periods [5]. As a result, few studies included findings on how variables associated with contraception have changed over time. The variables often associated with contraception choices were age, area of residency, income, education, media exposure, and relationship status [10, 12-16]. Few studies have also concluded association with factors such as race, number of children, religion, alcohol consumption, age at first sex, and employment [12,17].

This study improves on previous work by using nine years (2011-2019) of continuous data in the United States, a developed country. A longer span of continuous data should provide more insight into how factors associated with different methods of contraception have changed over time. Additionally, with the maturation of modern contraceptives, recent studies in countries like India, and South Korea, have also concluded new factors associated with their uses. This study aims to see if such factors have become apparent in the US.

## 2. Methodology

Our study uses data from the National Survey of Family Growth (NSFG) from 2011 to 2019. The data is available at the National Center of Health Statistics (NCHS). NSFG is a survey that “gathers information on family life, marriage and divorce, pregnancy, infertility, use of contraception, and men’s and women’s health [2]." Conducted by the Centers for Disease Control and Prevention (CDC) and NCHS, data is collected for spans of two years. The NCHS Research Ethics Review Board approved the survey protocol and informed consent procedures. A respondent per household was selected based on screening interviews. NSFG data is collected through interviews with around 10,000 men and women aged 15-44. (15-49 for 2015-2019). The interviews were conducted by female interviewees trained for the NSFG survey using computer-assisted personal interviewing (CAPI) techniques. Average interview times for both male and female respondents were within the limits of 80 minutes (female) and 60 minutes (male) limits approved by the Office of Management and Budget.

Four female response datasets were used from 2011-2013, 2013-2015, 2015-2017, and 2017-2019. The 2006-2010 dataset was omitted due to its high missing rate, different interviewing procedure, and missing multiple variables. Every four datasets used contained around 5000 responses labeled as "CASEID" and around 3000 variables.

For our study, variables were selected via a step-up procedure based on literature reviews. A total of 25 previously associated variables with contraception use, both from the United States and other countries, were identified. Variables from the recode section were selected because they were more general. Cross-checking with the NSFG data key (available publically from their website), categorical variables meaning "refusal to answer" and "do not know" were identified and replaced with NA for

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further imputation. By running diagnostics, missing rates of either 0, 12.7, or above 80% were apparent. A missing rate of 12.7% was therefore chosen to be the cut-off, and all variables above were deleted. After this process, 20 variables remained. (see Appendix A) A computed variable named “contraception” was also created by taking the sum of all contraception methods in the past 12 months. It will be used to inform about the overall factors contributing to using multiple ways of contraception over the past 12 months.

Using histograms, inconsistencies were found in the four datasets regarding the maximum age of the interviewee. The 2011-2013 and 2013-2015 data had a maximum age of 45, while the other two had a maximum age of 49. There was also a visible lack of age 45 interviewees in all four datasets. All rows where the interviewee’s age was above 44 were therefore deleted. Multivariate imputation by chained equation (MICE) was used for data imputation, and the random forest method was selected since all variables containing NAs were either categorical or binary.

Based on the data, Multivariate logistic regression was run for each contraceptive method as the response variable and the other variables (apart from other contraceptives) as the covariate. This was repeated for each dataset. A step-down AIC model selection was conducted, and to verify results, the Hosmer Lemeshow test was applied to each model [3].

## 3. Results

Overall, “age” (AGER), “race” (RACE), and “pregnancy” (EVERPREG) are the top three most frequently associated variables among the eight contraceptive methods. Other commonly associated variables also included “the number of kids in the family” (NUMKDHH), “marital status” (RMARITAL), and “years of education” (EDUCAT). Conversely, variables “income” (EARN), “religion raised” (RELRAISD), “current religion” (RELCURR), and “ever worked” (REARNTY) are the least frequently associated variables. Six out of the 32 models (one model for each of the eight types of contraceptive methods repeated in four datasets) were considered a bad fit (p-value > 0.05) according to the Hosmer Lemeshow test. [3] This included 2017-2019 contraception usage (p-value 0.006856), 2017-2019 IUD usage (p-value 0.04009), 2017-2019 pill usage (p-value 1.501e-07), 2015-2017 pill usage (p-value 1.501e-07), 2013-2015 pill usage (p-value 0.03549) and 2011-2013 pill usage (p-value 0.003437).

Contraceptive pill (PILL_12) use was consistently found to be associated with “age,” “pregnancy,” and “race” from 2011-2019. (see Appendix B) As time progressed, fewer variables were associated with pill use. 2011-2013 was the only time pill use was associated with the variable "current religion," specifically Baptist / Southern Baptist (p-value 0.001996) and Methodist, Lutheran, Presbyterian, and Episcopal. (p-value 0.019125) Only in 2013-2015 "marital status” was associated with pill use, specifically divorced or annulled (p-value 0.01222). 2015-2017 was the last dataset where pill use was associated with “the number of kids in the family” and “years of education.” Although pill usage in 2017-2019 had the least amount of variables associated, it was also the first time pill use was associated with the "highest degree." (HIEDUC) People with approximately a bachelor's degree were associated with a p-value of 0.000693 and 0.000160.

IUD usage (IUD_12) was found to be associated with “age,” “pregnancy,” and “the number of kids in the family” (one and two kids) from 2011-2019. (see Appendix C) As time progressed, IUD usage became less associated with “religion raised,” “highest degrees,” and more with “drinking frequency” (DRINK12) and “current religion.” In 2011-2013, IUD use was associated with a wide range of “income.” This association was not observed from 2013-2017, but in 2017-2019 IUD became associated with “income” again. However, association in this timespan was not observed with low income but only with middle to high income. 2011-2013 was the only timespan where IUD use was associated with “religion raised.” (other religion, p-value 0.027871) 2013-2015 was the first timespan for IUD use to be associated with “drinking frequency,” from once or twice during the year

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(p-value 0.024252) to daily (p-value 2.53e-05). “Other race” (apart from white and black) was only associated in this timespan (p-value 0.001970). In 2015-2017 IUD usage became associated with “current religion,” specifically Catholic (p-value 0.009140) Baptist / Southern Baptist (p-value 0.000889), Methodist, Lutheran, Presbyterians, Episcopal (p-value 0.001254), and Protestant (p-value 0.002288). "Years of education" became associated with IUD use for the first time in 2017-2019, specifically for people with 17 years of education (p-value 0.002309). "Drinking" and "current religion" (apart from Protestant) continued to be associated.

Contraceptive implant usage (IMPLANT_12) was consistently found to be associated with “age” and “pregnancy” from 2011-2019. (see Appendix D) More variables became associated with implant use as time progressed, but overall only a few variables were associated with implant use. In 2011-2013 implant use was associated with "age" (p-value 6.78e-14), "pregnancy" (p-value 8.92e-10), and "ever worked" (p-value 0.0119). "Ever worked" was not associated with implant use again until 2017-2019. 2013-2015 was the first timespan implant use associated with people with two kids in their families (p-value 0.00439). In 2015-2017 implants were not associated with "the number of kids" but became associated with multiple religious variables, including the "current religion" and "religion raised" of Catholic (p-value 0.032719 & 0.000989), Protestant (p-value 0.040172 & 0.012900). "marital status" was also first observed in this timespan. Associations were observed with people not married but living with an opposite-sex partner (p-value 0.001293), divorced or annulled (p-value 0.020178), and never married (p-value 0.041209). In 2017-2019 out of all marital statuses, only people not married but living with an opposite-sex partner remained associated (p-value 0.00132). “The number of kids” became associated with implant use again, specifically in families with one child (p-value 0.01552) and two children (p-value 0.00376).

Depo-Provera use (DEPO_12) was associated with “age” and “white race” from 2011-2019. (see Appendix E) As time progressed, Depo-Povera use began to be associated with "religion raised" but less with "current religion," "ever pregnant," and "highest degree." 2011-2013 was the only timespan where Depo-Povera use was associated with the "highest degree" of an under-high school graduate diploma (p-value 0.010873). 2013-2015 was the only timespan where Depo-Povera use was not associated with people not married but living with an opposite-sex partner or having never been married. It was also the last timespan where Depo-Povera use was associated with the "highest degree." 2015-2017 was the timespan where Depo-Povera use was first associated with "years of education," specific people with 16 years of education (p-value 0.006644) and 18 years of education (p-value 0.027910). This was also the only timespan where Depo-Povera use was not associated with "other race" and associated with the "current religion" of Catholic (p-value 0.003795) and Fundamentalist Protestant (p-value 0.038205). 2017-2019 was the first timespan where Depo-Povera use was associated with "religion raised," specifically Catholic (p-value 0.003884) and Other Protestant Denomination (p-value 0.026108). Depo-Povera continued to be associated with “race,” “years of education,” and “marital status” in this timespan.

Emergency pill usage (MPILL_12) was found to be associated with “age” and “drinking frequency” from 2011-2019. (see Appendix F) As time progressed, emergency pill usage became less associated with “current religion” and “highest degree” but more with “race.” 2011-2013 was the only timespan where emergency pill usage was associated with “current religion,” specifically Catholic (p-value 0.013643) and Protestant (p-value 0.027018). “Years of education” was also associated with emergency pill use in this timespan, but this association was not observed again until 2017-2019. In 2013-2015, associations with “marital status” was observed, specifically people who have not married but living with an opposite-sex partner (p-value 0.000291), divorced or annulled (p-value 0.007889), separated for reasons of marital discord (p-value 9.18e-05), and never been married (p-value 6.67e-06). These associations were also observed for later timespans except for people who had not married but living with an opposite-sex partner. 2015-2017 was similar to 2013-2015 and

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also the last timespan where the "highest degree" was associated with emergency pill use. In 2017-2019, apart from previously mentioned associations, "other race" was also first associated with emergency pill use (p-value 0.029310).

No associations were observed with contraceptive patch use (PATCH_12) from 2011-2019. (see Appendix G) Contraceptive patch use also had the least variable associated out of all the contraceptive methods. 2011-2013 was the only timespan where "age" was not associated with contraceptive patch use, but an association with "other race" was observed (p-value 0.01). In 2013-2015 contraceptive patch use was associated with "pregnancy" (p-value 0.033863) and "age" (p-value 0.0316). For timespans 2015-2019, contraceptive patch use was only associated with age, with p-values of 0.0133 and 0.0316.

Contraceptive ring use (RING_12) was also not found to have consistently associated variables from 2011-2019. (see Appendix H) A decreasing trend was observed with the number of factors associated with contraceptive ring use. 2011-2013 was the only timespan where "pregnancy" was associated with contraception use (p-value 0.00224) and people with 14-16 years of education. Contraceptive ring use was associated with minor variables in 2013-2015. "Drinking frequency" was observed to be associated, specifically with people who drink about once a month (p-value 0.00012) to about once a week (p-value 4.21e-06); similar factors were associated for timespans 2015-2019. 2015-2017 was the only timespan where contraceptive ring use became associated with households with two kids (p-value 0.003551) and "highest degree," which was associated with numerous degrees above college. In 2017-2019 contraceptive ring use became associated with "white race" (p-value 0.003689) and stopped being associated with age (p-value 0.129604).

General Contraceptive use (Contraception) was consistently found to be associated with “age,” “weekly drinkers,” and “white race.” (see Appendix I) As time progressed, variables such as "number of kids in the family," "current religion," and "highest degree" became less associated with contraceptive use, while factors such as "income" became more associated. Contraceptive use has also been frequently associated with "years of education" and "marital status.” In 2011-2013, contraception use was associated with not only “white race” (p-value 8.54e-05) but also “other race” (p-value 0.046673). This association was observed for all other timespans except 2013-2015. 2011-2013 was also the only timespan for an association with people who drink once or twice during the year (p-value 0.025811) and people who are separated for reasons of marital discord (p-value 0.033357). 2013-2015 was the only timespan where contraception use was associated with “pregnancy” (p-value 0.001991) and people with a high school graduate diploma (p-value 0.017883) or below (p-value 0.038443). An association for numerous “marital status" factors was also observed, including people not married but living with an opposite-sex partner, divorced or annulled, or never been married. These associations were also observed for timespans 2015-2019. 2015-2017 was the only timespan where contraceptive use was associated with the "current religion" of Protestants (p-value 0.000238). In 2017-2019, contraceptive use was associated with high income for the first time, and all religious factors were observed to be no longer associated.

## 4. Conclusion

This study has found “age,” “race,” “pregnancy,” “number of kids in the family,” “marital status," and "years of education" to be the most common associated variables. Similar results were found in previous worldwide studies[18], studies in the United States[16], and underdeveloped countries such as Guinea[9] and Ethiopia [13]. This study concluded a shift away from associations with "highest degree" and "current religion." A shift away from the “highest degree” being associated with contraceptive use could be from the increasing pervasiveness of sex education in the United States.[5]

Although this study concluded a shift away from religious factors, previous studies conducted in

the 1990s United States also showed contrasting results. [12]It could be that religion has become a less dominant factor regarding contraception use. However, it is important to point out that although "current religion" has become less associated with contraceptive use, "religion raised" has become slightly increasingly associated with some methods of contraception use. Therefore, this study has also expanded on the previous study regarding religion and found the most associated religion to be Protestant, followed by Catholic.

Some models show a poor fit of the p-value for the Hosmer Lemeshow test. [3]This is likely due to the wide range of categorical variables in "income" and "years of education." Therefore, we propose future studies to separate the categorical variables into binary dummy variables for better model fittings.

The variable “marital status" provided exciting results in this study; different statuses were associated with different methods of contraceptives. Future studies involving psychology could be conducted on different marital statuses resulting in different behaviors and how those behaviors could lead to contraceptive choices. With different datasets, future studies may also involve time series analysis, where trends in contraceptive use can be plotted along significant events in the country. Doing so might propose more specific reasons why factors associated with contraception have changed over time.

## References

[1] *United Nations, Department of Economic and Social Affairs, Population Division (2019). Contraceptive Use by Method 2019: Data Booklet (ST/ESA/SER.A/435).*

[2] *Centers for Disease Control and Prevention. (2022, February 16). NSFG - about the National Survey of Family Growth. Centers for Disease Control and Prevention. Retrieved September 24, 2022, from https://www.cdc.gov/nchs/nsfg/about_nsfg.htm*

[3] *Hosmer D W, Lemeshow S 2000. Applied Logistic Regression. New York, USA: John Wiley and Sons.*

[4] *United Nations. (n.d.). Population. United Nations. Retrieved September 13, 2022, from https://www.un.org/en/global-issues/population*

[5] *United Nations, Department of Economic and Social Affairs, Population Division (2015). (2016, March). Trends in Contraceptive Use Worldwide 2015. Retrieved September 24, 2022, from https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesa_pd_report_2015_trends_contraceptive_use.pdf*

[6] *Almalik, M., Mosleh, S., & Almasarweh, I. (2017, April 5). Are users of modern and traditional contraceptive methods in Jordan different? World Health Organization. Retrieved September 24, 2022, from http://www.emro.who.int/emhj-volume-24-2018/volume-24-issue-4/are-users-of-modern-and-traditional-contraceptive-methods-in-jordan-different.html*

[7] *Vegunta, S., Carrubba, A. R., & Wasson, M. N. (2021, December 1). Changing US trends in contraceptive choices. Cleveland Clinic Journal of Medicine. Retrieved September 24, 2022, from https://www.ccjm.org/content/88/12/689*

[8] *Future trends in contraception in the developing ... - population council. (n.d.). Retrieved September 13, 2022, from https://knowledgecommons.popcouncil.org/cgi/viewcontent.cgi?article=1285&context=departments_sbsr-pgy*

[9] *Sidibé, S., Delamou, A., Camara, B.S. et al. Trends in contraceptive use, unmet need and associated factors of modern contraceptive use among urban adolescents and young women in Guinea. BMC Public Health 20, 1840 (2020). https://doi.org/10.1186/s12889-020-09957-y*

[10] *Yussuf, M. H., Elewonibi, B. R., Rwabilimbo, M. M., Mboya, I. B., & Mahande, M. J. (2020, June 29). Trends and predictors of changes in modern contraceptive use among women aged 15–49 years in Tanzania from 2004–2016: Evidence from Tanzania Demographic and Health Surveys. PLOS ONE. Retrieved September 24, 2022, from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0234980*

[11] *Cardona, C., OlaOlorun, F. M., Omulabi, E., Gichangi, P., Thiogo, M., Tsui, A., & Anglewicz, P. (2022, August 22). The relationship between client dissatisfaction and contraceptive discontinuation among urban family planning clients in three sub-Saharan African countries. PLOS ONE. Retrieved September 24, 2022, from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271911*

[12] *Goldscheider, C., & Mosher, W. D. (1991). Patterns of Contraceptive Use in the United States: The Importance of Religious Factors. Studies in Family Planning, 22(2), 102–115. https://doi.org/10.2307/1966780*

DOI: 10.54254/2753-7048/5/20220616

[13] *Tiruneh, F. N., Chuang, K. Y., Ntenda, P. A., & Chuang, Y. C. (2016). Factors associated with contraceptive use and intention to use contraceptives among married women in Ethiopia. Women & health, 56(1), 1–22. https://doi.org/10.1080/03630242.2015.1074640*

[14] *Ahinkorah, B.O., Budu, E., Aboagye, R.G. et al. Factors associated with modern contraceptive use among women with no fertility intention in sub-Saharan Africa: evidence from cross-sectional surveys of 29 countries. Contracept Reprod Med 6, 22 (2021). https://doi.org/10.1186/s40834-021-00165-6*

[15] *Frost, J.J., Singh, S. and Finer, L.B. (2007), Factors Associated with Contraceptive Use and Nonuse, United States, 2004. Perspectives on Sexual and Reproductive Health, 39: 90-99. https://doi.org/10.1363/3909007*

[16] *Frost, J. J., Guttmacher Institute, & Darroch, J. E. (2022, August 25). Factors associated with contraceptive choice and inconsistent method use, United States, 2004. Guttmacher Institute. Retrieved September 13, 2022, from https://www.guttmacher.org/journals/psrh/2008/factors-associated-contraceptive-choice-and-inconsistent-method-use-united*

[17] *Park, H., & Kim, K. (2021, October 16). Trends and factors associated with oral contraceptive use among Korean women. Healthcare (Basel, Switzerland). Retrieved September 13, 2022, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8544440/#__ffn_sectitle*

[18] *Palermo, T., Bleck, J., & Westley, E. (2014). Knowledge and Use of Emergency Contraception: A Multicountry Analysis. International Perspectives on Sexual and Reproductive Health, 40(2), 79–86. https://doi.org/10.1363/4007914*

## Appendix

**Appendix A**

**Summary Statistics for Variables Used in This Study (left to right 2011-2013, 2013-2015, 2015-2017, 2017-2019)**

| Variable | N | Mean |
|---|---|---|
| CASEID | 5599 | 55184.587 |
| RMARITAL | 5599 | |
| ... 1 | 1709 | 30.5% |
| ... 2 | 763 | 13.6% |
| ... 3 | 21 | 0.4% |
| ... 4 | 355 | 6.3% |
| ... 5 | 218 | 3.9% |
| ... 6 | 2533 | 45.2% |
| AGER | 5599 | 28.603 |
| EDUCAT | 5599 | |
| ... 9 | 688 | 12.3% |
| ... 10 | 386 | 6.9% |
| ... 11 | 390 | 7% |
| ... 12 | 1294 | 23.1% |
| ... 13 | 720 | 12.9% |
| ... 14 | 618 | 11% |
| ... 15 | 268 | 4.8% |
| ... 16 | 606 | 10.8% |
| ... 17 | 179 | 3.2% |
| ... 18 | 224 | 4% |
| ... 19 | 226 | 4% |
| HIEDUC | 5599 | |
| ... 5 | 579 | 10.3% |
| ... 6 | 327 | 5.8% |
| ... 7 | 328 | 5.9% |
| ... 8 | 34 | 0.6% |
| ... 9 | 1488 | 26.6% |
| ... 10 | 1245 | 22.2% |
| ... 11 | 434 | 7.8% |
| ... 12 | 775 | 13.8% |
| ... 13 | 314 | 5.6% |
| ... 14 | 39 | 0.7% |
| ... 15 | 36 | 0.6% |
| RACE | 5599 | |
| ... 1 | 1331 | 23.8% |
| ... 2 | 3547 | 63.4% |
| ... 3 | 721 | 12.9% |
| NUMKDHH | 5599 | |
| ... 0 | 2603 | 46.5% |
| ... 1 | 1161 | 20.7% |
| ... 2 | 1061 | 18.9% |
| ... 3 | 537 | 9.6% |
| ... 4 | 177 | 3.2% |
| ... 5 | 60 | 1.1% |
| RELRAISD | 5599 | |

| Variable | N | Mean |
|---|---|---|
| CASEID | 5698 | 65522.615 |
| RMARITAL | 5698 | |
| ... 1 | 1698 | 29.8% |
| ... 2 | 810 | 14.2% |
| ... 3 | 14 | 0.2% |
| ... 4 | 319 | 5.6% |
| ... 5 | 183 | 3.2% |
| ... 6 | 2674 | 46.9% |
| AGER | 5698 | 28.879 |
| EDUCAT | 5698 | |
| ... 9 | 645 | 11.3% |
| ... 10 | 382 | 6.7% |
| ... 11 | 434 | 7.6% |
| ... 12 | 1242 | 21.8% |
| ... 13 | 655 | 11.5% |
| ... 14 | 671 | 11.8% |
| ... 15 | 271 | 4.8% |
| ... 16 | 651 | 11.4% |
| ... 17 | 208 | 3.6% |
| ... 18 | 284 | 5% |
| ... 19 | 257 | 4.5% |
| HIEDUC | 5698 | |
| ... 5 | 549 | 9.6% |
| ... 6 | 323 | 5.7% |
| ... 7 | 368 | 6.5% |
| ... 8 | 33 | 0.6% |
| ... 9 | 1427 | 25% |
| ... 10 | 1229 | 21.6% |
| ... 11 | 440 | 7.7% |
| ... 12 | 853 | 15% |
| ... 13 | 373 | 6.5% |
| ... 14 | 53 | 0.9% |
| ... 15 | 50 | 0.9% |
| RACE | 5698 | |
| ... 1 | 1286 | 22.6% |
| ... 2 | 3798 | 66.7% |
| ... 3 | 614 | 10.8% |
| NUMKDHH | 5698 | |
| ... 0 | 2796 | 49.1% |
| ... 1 | 1143 | 20.1% |
| ... 2 | 1017 | 17.8% |
| ... 3 | 515 | 9% |
| ... 4 | 170 | 3% |
| ... 5 | 57 | 1% |

| Variable | N | Mean |
|---|---|---|
| CASEID | 4879 | 75610.822 |
| RMARITAL | 4879 | |
| ... 1 | 1501 | 30.8% |
| ... 2 | 577 | 11.8% |
| ... 3 | 23 | 0.5% |
| ... 4 | 266 | 5.5% |
| ... 5 | 145 | 3% |
| ... 6 | 2367 | 48.5% |
| AGER | 4879 | 28.797 |
| EDUCAT | 4879 | |
| ... 9 | 522 | 10.7% |
| ... 10 | 322 | 6.6% |
| ... 11 | 374 | 7.7% |
| ... 12 | 1088 | 22.3% |
| ... 13 | 504 | 10.3% |
| ... 14 | 520 | 10.7% |
| ... 15 | 249 | 5.1% |
| ... 16 | 653 | 13.4% |
| ... 17 | 196 | 4% |
| ... 18 | 234 | 4.8% |
| ... 19 | 217 | 4.4% |
| HIEDUC | 4879 | |
| ... 5 | 455 | 9.3% |
| ... 6 | 284 | 5.8% |
| ... 7 | 312 | 6.4% |
| ... 8 | 21 | 0.4% |
| ... 9 | 1230 | 25.2% |
| ... 10 | 980 | 20.1% |
| ... 11 | 359 | 7.4% |
| ... 12 | 822 | 16.8% |
| ... 13 | 335 | 6.9% |
| ... 14 | 43 | 0.9% |
| ... 15 | 38 | 0.8% |
| RACE | 4879 | |
| ... 1 | 1251 | 25.6% |
| ... 2 | 3204 | 65.7% |
| ... 3 | 424 | 8.7% |
| NUMKDHH | 4879 | |
| ... 0 | 2432 | 49.8% |
| ... 1 | 933 | 19.1% |
| ... 2 | 935 | 19.2% |
| ... 3 | 390 | 8% |
| ... 4 | 189 | 3.9% |
| RELRAISD | 4879 | |

| Variable | N | Mean |
|---|---|---|
| CASEID | 5409 | 86378.738 |
| RMARITAL | 5409 | |
| ... 1 | 1557 | 28.8% |
| ... 2 | 681 | 12.6% |
| ... 3 | 17 | 0.3% |
| ... 4 | 284 | 5.3% |
| ... 5 | 161 | 3% |
| ... 6 | 2709 | 50.1% |
| AGER | 5409 | 28.999 |
| EDUCAT | 5409 | |
| ... 9 | 555 | 10.3% |
| ... 10 | 354 | 6.5% |
| ... 11 | 366 | 6.8% |
| ... 12 | 1223 | 22.6% |
| ... 13 | 578 | 10.7% |
| ... 14 | 606 | 11.2% |
| ... 15 | 289 | 5.3% |
| ... 16 | 733 | 13.6% |
| ... 17 | 208 | 3.8% |
| ... 18 | 270 | 5% |
| ... 19 | 227 | 4.2% |
| HIEDUC | 5409 | |
| ... 5 | 458 | 8.5% |
| ... 6 | 299 | 5.5% |
| ... 7 | 308 | 5.7% |
| ... 8 | 29 | 0.5% |
| ... 9 | 1402 | 25.9% |
| ... 10 | 1102 | 20.4% |
| ... 11 | 450 | 8.3% |
| ... 12 | 921 | 17% |
| ... 13 | 357 | 6.6% |
| ... 14 | 35 | 0.6% |
| ... 15 | 48 | 0.9% |
| RACE | 5409 | |
| ... 1 | 1297 | 24% |
| ... 2 | 3697 | 68.3% |
| ... 3 | 415 | 7.7% |
| NUMKDHH | 5409 | |
| ... 0 | 2831 | 52.3% |
| ... 1 | 976 | 18% |
| ... 2 | 968 | 17.9% |
| ... 3 | 422 | 7.8% |
| ... 4 | 212 | 3.9% |
| RELRAISD | 5409 | |

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| | | |
|---|---|---|
| ... 5 | 60 | 1.1% |
| RELRAISD | 5599 | |
| ... 1 | 545 | 9.7% |
| ... 2 | 1791 | 32% |
| ... 3 | 1225 | 21.9% |
| ... 4 | 519 | 9.3% |
| ... 5 | 303 | 5.4% |
| ... 6 | 150 | 2.7% |
| ... 7 | 590 | 10.5% |
| ... 8 | 476 | 8.5% |
| RELCURR | 5599 | |
| ... 1 | 1110 | 19.8% |
| ... 2 | 1283 | 22.9% |
| ... 3 | 986 | 17.6% |
| ... 4 | 408 | 7.3% |
| ... 5 | 299 | 5.3% |
| ... 6 | 171 | 3.1% |
| ... 7 | 905 | 16.2% |
| ... 8 | 437 | 7.8% |
| EVERPREG | 5599 | |
| ... 1 | 3501 | 62.5% |
| ... 5 | 2098 | 37.5% |
| REARNTY | 5599 | |
| ... 1 | 4938 | 88.2% |
| ... 5 | 661 | 11.8% |
| DRINK12 | 5599 | |
| ... 1 | 1380 | 24.6% |
| ... 2 | 1211 | 21.6% |
| ... 3 | 1072 | 19.1% |
| ... 4 | 807 | 14.4% |
| ... 5 | 927 | 16.6% |
| ... 6 | 202 | 3.6% |
| EARN | 5599 | |
| ... 1 | 1083 | 19.3% |
| ... 2 | 508 | 9.1% |
| ... 3 | 386 | 6.9% |
| ... 4 | 439 | 7.8% |
| ... 5 | 430 | 7.7% |
| ... 6 | 506 | 9% |
| ... 7 | 443 | 7.9% |
| ... 8 | 359 | 6.4% |
| ... 9 | 291 | 5.2% |
| ... 10 | 245 | 4.4% |
| ... 11 | 267 | 4.8% |
| ... 12 | 212 | 3.8% |
| ... 13 | 184 | 3.3% |
| ... 14 | 122 | 2.2% |
| ... 15 | 124 | 2.2% |
| PILL_12 | 5599 | |
| ... 0 | 4149 | 74.1% |
| ... 1 | 1450 | 25.9% |
| IUD_12 | 5599 | |
| ... 0 | 5139 | 91.8% |
| ... 1 | 460 | 8.2% |
| IMPLANT_12 | 5599 | |
| ... 0 | 5508 | 98.4% |
| ... 1 | 91 | 1.6% |
| DEPO_12 | 5599 | |
| ... 0 | 5237 | 93.5% |
| ... 1 | 362 | 6.5% |
| MPILL_12 | 5599 | |
| ... 0 | 5442 | 97.2% |
| ... 1 | 157 | 2.8% |
| PATCH_12 | 5599 | |
| ... 0 | 5558 | 99.3% |
| ... 1 | 41 | 0.7% |
| RING_12 | 5599 | |
| ... 0 | 5478 | 97.8% |
| ... 1 | 121 | 2.2% |
| Contraception | 5599 | |
| ... 0 | 3188 | 56.9% |
| ... 1 | 2164 | 38.6% |
| ... 2 | 225 | 4% |
| ... 3 | 20 | 0.4% |
| ... 4 | 2 | 0% |

| | | |
|---|---|---|
| ... 5 | 57 | 1% |
| RELRAISD | 5698 | |
| ... 1 | 689 | 12.1% |
| ... 2 | 1749 | 30.7% |
| ... 3 | 1033 | 18.1% |
| ... 4 | 523 | 9.2% |
| ... 5 | 359 | 6.3% |
| ... 6 | 157 | 2.8% |
| ... 7 | 745 | 13.1% |
| ... 8 | 443 | 7.8% |
| RELCURR | 5698 | |
| ... 1 | 1308 | 23% |
| ... 2 | 1231 | 21.6% |
| ... 3 | 850 | 14.9% |
| ... 4 | 363 | 6.4% |
| ... 5 | 317 | 5.6% |
| ... 6 | 151 | 2.7% |
| ... 7 | 1064 | 18.7% |
| ... 8 | 414 | 7.3% |
| EVERPREG | 5698 | |
| ... 1 | 3475 | 61% |
| ... 5 | 2223 | 39% |
| REARNTY | 5698 | |
| ... 1 | 5075 | 89.1% |
| ... 5 | 623 | 10.9% |
| DRINK12 | 5698 | |
| ... 1 | 1520 | 26.7% |
| ... 2 | 1230 | 21.6% |
| ... 3 | 966 | 17% |
| ... 4 | 803 | 14.1% |
| ... 5 | 944 | 16.6% |
| ... 6 | 235 | 4.1% |
| EARN | 5698 | |
| ... 1 | 989 | 17.4% |
| ... 2 | 515 | 9% |
| ... 3 | 415 | 7.3% |
| ... 4 | 444 | 7.8% |
| ... 5 | 432 | 7.6% |
| ... 6 | 514 | 9% |
| ... 7 | 403 | 7.1% |
| ... 8 | 351 | 6.2% |
| ... 9 | 309 | 5.4% |
| ... 10 | 226 | 4% |
| ... 11 | 312 | 5.5% |
| ... 12 | 263 | 4.6% |
| ... 13 | 198 | 3.5% |
| ... 14 | 159 | 2.8% |
| ... 15 | 168 | 2.9% |
| PILL_12 | 5698 | |
| ... 0 | 4164 | 73.1% |
| ... 1 | 1534 | 26.9% |
| IUD_12 | 5698 | |
| ... 0 | 5236 | 91.9% |
| ... 1 | 462 | 8.1% |
| IMPLANT_12 | 5698 | |
| ... 0 | 5557 | 97.5% |
| ... 1 | 141 | 2.5% |
| DEPO_12 | 5698 | |
| ... 0 | 5355 | 94% |
| ... 1 | 343 | 6% |
| MPILL_12 | 5698 | |
| ... 0 | 5501 | 96.5% |
| ... 1 | 197 | 3.5% |
| PATCH_12 | 5698 | |
| ... 0 | 5670 | 99.5% |
| ... 1 | 28 | 0.5% |
| RING_12 | 5698 | |
| ... 0 | 5584 | 98% |
| ... 1 | 114 | 2% |
| Contraception | 5698 | |
| ... 0 | 3134 | 55% |
| ... 1 | 2325 | 40.8% |
| ... 2 | 223 | 3.9% |
| ... 3 | 16 | 0.3% |

| | | |
|---|---|---|
| RELRAISD | 4879 | |
| ... 1 | 594 | 12.2% |
| ... 2 | 1357 | 27.8% |
| ... 3 | 1093 | 22.4% |
| ... 4 | 371 | 7.6% |
| ... 5 | 239 | 4.9% |
| ... 6 | 114 | 2.3% |
| ... 7 | 640 | 13.1% |
| ... 8 | 471 | 9.7% |
| RELCURR | 4879 | |
| ... 1 | 1129 | 23.1% |
| ... 2 | 980 | 20.1% |
| ... 3 | 900 | 18.4% |
| ... 4 | 243 | 5% |
| ... 5 | 214 | 4.4% |
| ... 6 | 120 | 2.5% |
| ... 7 | 887 | 18.2% |
| ... 8 | 406 | 8.3% |
| EVERPREG | 4879 | |
| ... 1 | 2932 | 60.1% |
| ... 5 | 1947 | 39.9% |
| REARNTY | 4879 | |
| ... 1 | 4351 | 89.2% |
| ... 5 | 528 | 10.8% |
| DRINK12 | 4879 | |
| ... 1 | 1366 | 28% |
| ... 2 | 997 | 20.4% |
| ... 3 | 803 | 16.5% |
| ... 4 | 671 | 13.8% |
| ... 5 | 819 | 16.8% |
| ... 6 | 223 | 4.6% |
| EARN | 4879 | |
| ... 1 | 788 | 16.2% |
| ... 2 | 420 | 8.6% |
| ... 3 | 346 | 7.1% |
| ... 4 | 341 | 7% |
| ... 5 | 351 | 7.2% |
| ... 6 | 391 | 8% |
| ... 7 | 392 | 8% |
| ... 8 | 350 | 7.2% |
| ... 9 | 263 | 5.4% |
| ... 10 | 225 | 4.6% |
| ... 11 | 300 | 6.1% |
| ... 12 | 221 | 4.5% |
| ... 13 | 198 | 4.1% |
| ... 14 | 141 | 2.9% |
| ... 15 | 152 | 3.1% |
| PILL_12 | 4879 | |
| ... 0 | 3689 | 75.6% |
| ... 1 | 1190 | 24.4% |
| IUD_12 | 4879 | |
| ... 0 | 4388 | 89.9% |
| ... 1 | 491 | 10.1% |
| IMPLANT_12 | 4879 | |
| ... 0 | 4696 | 96.2% |
| ... 1 | 183 | 3.8% |
| DEPO_12 | 4879 | |
| ... 0 | 4580 | 93.9% |
| ... 1 | 299 | 6.1% |
| MPILL_12 | 4879 | |
| ... 0 | 4729 | 96.9% |
| ... 1 | 150 | 3.1% |
| PATCH_12 | 4879 | |
| ... 0 | 4851 | 99.4% |
| ... 1 | 28 | 0.6% |
| RING_12 | 4879 | |
| ... 0 | 4788 | 98.1% |
| ... 1 | 91 | 1.9% |
| Contraception | 4879 | |
| ... 0 | 2660 | 54.5% |
| ... 1 | 2018 | 41.4% |
| ... 2 | 190 | 3.9% |
| ... 3 | 10 | 0.2% |
| ... 4 | 1 | 0% |

| | | |
|---|---|---|
| ... 4 | 212 | 3.9% |
| RELRAISD | 5409 | |
| ... 1 | 693 | 12.8% |
| ... 2 | 1780 | 32.9% |
| ... 3 | 1028 | 19% |
| ... 4 | 460 | 8.5% |
| ... 5 | 228 | 4.2% |
| ... 6 | 132 | 2.4% |
| ... 7 | 664 | 12.3% |
| ... 8 | 424 | 7.8% |
| RELCURR | 5409 | |
| ... 1 | 1416 | 26.2% |
| ... 2 | 1189 | 22% |
| ... 3 | 799 | 14.8% |
| ... 4 | 272 | 5% |
| ... 5 | 176 | 3.3% |
| ... 6 | 134 | 2.5% |
| ... 7 | 994 | 18.4% |
| ... 8 | 429 | 7.9% |
| EVERPREG | 5409 | |
| ... 1 | 3098 | 57.3% |
| ... 5 | 2311 | 42.7% |
| REARNTY | 5409 | |
| ... 1 | 4891 | 90.4% |
| ... 5 | 518 | 9.6% |
| DRINK12 | 5409 | |
| ... 1 | 1401 | 25.9% |
| ... 2 | 1081 | 20% |
| ... 3 | 891 | 16.5% |
| ... 4 | 799 | 14.8% |
| ... 5 | 988 | 18.3% |
| ... 6 | 249 | 4.6% |
| EARN | 5409 | |
| ... 1 | 732 | 13.5% |
| ... 2 | 412 | 7.6% |
| ... 3 | 270 | 5% |
| ... 4 | 370 | 6.8% |
| ... 5 | 353 | 6.5% |
| ... 6 | 462 | 8.5% |
| ... 7 | 506 | 9.4% |
| ... 8 | 429 | 7.9% |
| ... 9 | 344 | 6.4% |
| ... 10 | 249 | 4.6% |
| ... 11 | 390 | 7.2% |
| ... 12 | 285 | 5.3% |
| ... 13 | 238 | 4.4% |
| ... 14 | 199 | 3.7% |
| ... 15 | 170 | 3.1% |
| PILL_12 | 5409 | |
| ... 0 | 4047 | 74.8% |
| ... 1 | 1362 | 25.2% |
| IUD_12 | 5409 | |
| ... 0 | 4846 | 89.6% |
| ... 1 | 563 | 10.4% |
| IMPLANT_12 | 5409 | |
| ... 0 | 5190 | 96% |
| ... 1 | 219 | 4% |
| DEPO_12 | 5409 | |
| ... 0 | 5130 | 94.8% |
| ... 1 | 279 | 5.2% |
| MPILL_12 | 5409 | |
| ... 0 | 5253 | 97.1% |
| ... 1 | 156 | 2.9% |
| PATCH_12 | 5409 | |
| ... 0 | 5377 | 99.4% |
| ... 1 | 32 | 0.6% |
| RING_12 | 5409 | |
| ... 0 | 5336 | 98.7% |
| ... 1 | 73 | 1.3% |
| Contraception | 5409 | |
| ... 0 | 2917 | 53.9% |
| ... 1 | 2309 | 42.7% |
| ... 2 | 174 | 3.2% |
| ... 3 | 9 | 0.2% |

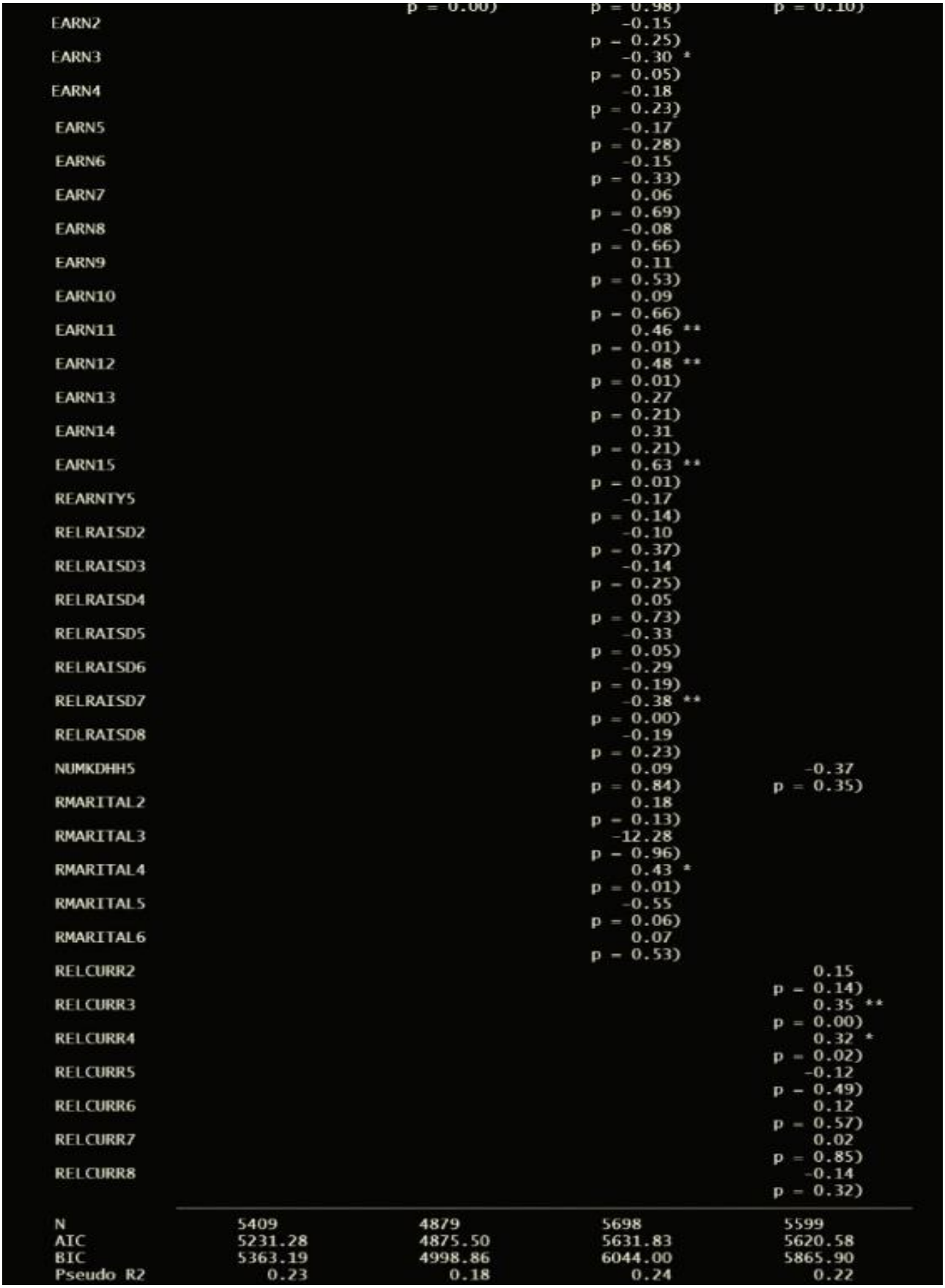
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**Appendix B**

**Table of Variables Associated with Pill Use From 2011-2019**

| | Pills 2017-2019 | Pills 2015-2017 | Pills 2013-2015 | Pills 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -0.49 * | -0.29 | 0.56 * | 0.12 |
| | p = 0.02) | p = 0.19) | p = 0.05) | p = 0.57) |
| AGER | -0.07 *** | -0.06 *** | -0.08 *** | -0.08 *** |
| | p - 0.00) | p - 0.00) | p - 0.00) | p - 0.00) |
| DRINK122 | -0.01 | | -0.10 | |
| | p = 0.94) | | p = 0.34) | |
| DRINK123 | 0.12 | | 0.10 | |
| | p = 0.26) | | p = 0.35) | |
| DRINK124 | 0.12 | | 0.18 | |
| | p = 0.31) | | p = 0.12) | |
| DRINK125 | -0.20 | | 0.09 | |
| | p - 0.09) | | p - 0.45) | |
| DRINK126 | -0.18 | | -0.53 * | |
| | p = 0.35) | | p = 0.01) | |
| EVERPREG5 | 0.98 *** | 0.59 *** | 0.86 *** | 0.59 *** |
| | p - 0.00) | p - 0.00) | p - 0.00) | p - 0.00) |
| RACE2 | 0.81 *** | 0.54 *** | 0.51 *** | 0.61 *** |
| | p - 0.00) | p - 0.00) | p - 0.00) | p - 0.00) |
| RACE3 | 0.76 *** | -0.04 | -0.07 | 0.46 *** |
| | p = 0.00) | p = 0.78) | p = 0.62) | p = 0.00) |
| HIEDUC6 | 0.28 | | -0.38 | -1.14 * |
| | p = 0.11) | | p = 0.58) | p = 0.02) |
| HIEDUC7 | 0.00 | | -0.76 | -1.27 ** |
| | p = 0.98) | | p = 0.22) | p = 0.01) |
| HIEDUC8 | -1.33 | | -1.78 * | -1.44 * |
| | p - 0.08) | | p - 0.02) | p - 0.04) |
| HIEDUC9 | -0.22 | | -0.90 * | -0.28 |
| | p = 0.13) | | p = 0.04) | p = 0.40) |
| HIEDUC10 | 0.07 | | -13.34 | -0.33 |
| | p - 0.61) | | p - 0.98) | p - 0.79) |
| HIEDUC11 | 0.14 | | -13.43 | -0.33 |
| | p - 0.43) | | p - 0.98) | p - 0.79) |
| HIEDUC12 | 0.53 *** | | -13.09 | -0.74 |
| | p = 0.00) | | p = 0.98) | p = 0.56) |
| HIEDUC13 | 0.73 *** | | -12.47 | -1.00 |
| | p = 0.00) | | p = 0.98) | p = 0.43) |
| HIEDUC14 | 0.43 | | -12.30 | -1.25 |
| | p - 0.35) | | p - 0.98) | p - 0.34) |
| HIEDUC15 | 0.13 | | -13.10 | -0.87 |
| | p - 0.76) | | p - 0.98) | p - 0.51) |
| NUMKDHH1 | | -0.04 | 0.06 | -0.25 * |
| | | p = 0.76) | p = 0.64) | p = 0.03) |
| NUMKDHH2 | | -0.29 * | -0.24 | -0.26 * |
| | | p - 0.04) | p - 0.08) | p - 0.04) |
| NUMKDHH3 | | -0.51 ** | -0.26 | -0.68 *** |
| | | p = 0.01) | p = 0.13) | p = 0.00) |
| NUMKDHH4 | | -1.00 ** | -0.67 * | -1.07 ** |
| | | p = 0.00) | p = 0.04) | p = 0.00) |
| EDUCAT10 | | 0.27 | 0.04 | 1.10 * |
| | | p = 0.12) | p = 0.95) | p = 0.01) |
| EDUCAT11 | | 0.07 | 0.40 | 1.09 * |
| | | p - 0.69) | p - 0.50) | p - 0.02) |
| EDUCAT12 | | 0.01 | 0.87 * | 0.28 |
| | | p = 0.93) | p = 0.04) | p = 0.38) |
| EDUCAT13 | | 0.37 * | 13.27 | 0.71 |
| | | p = 0.02) | p = 0.98) | p = 0.57) |
| EDUCAT14 | | 0.54 *** | 13.61 | 0.88 |
| | | p - 0.00) | p - 0.98) | p - 0.48) |
| EDUCAT15 | | 0.93 *** | 13.83 | 1.08 |
| | | p = 0.00) | p = 0.98) | p = 0.38) |
| EDUCAT16 | | 0.85 *** | 13.45 | 1.52 |
| | | p = 0.00) | p = 0.98) | p = 0.22) |
| EDUCAT17 | | 1.07 *** | 13.41 | 1.50 |
| | | p = 0.00) | p = 0.98) | p = 0.23) |
| EDUCAT18 | | 0.78 *** | 13.01 | 1.80 |
| | | p - 0.00) | p - 0.98) | p - 0.15) |
| EDUCAT19 | | 0.71 ** | 12.77 | 2.09 |
| | | p = 0.00) | p = 0.98) | p = 0.10) |
| EARN2 | | | -0.15 | |

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| | | | | |
|---|---|---|---|---|
| | | p = 0.00) | p = 0.98) | p = 0.10) |
| EARN2 | | | -0.15 | |
| | | | p = 0.25) | |
| EARN3 | | | -0.30 * | |
| | | | p = 0.05) | |
| EARN4 | | | -0.18 | |
| | | | p = 0.23) | |
| EARN5 | | | -0.17 | |
| | | | p = 0.28) | |
| EARN6 | | | -0.15 | |
| | | | p = 0.33) | |
| EARN7 | | | 0.06 | |
| | | | p = 0.69) | |
| EARN8 | | | -0.08 | |
| | | | p = 0.66) | |
| EARN9 | | | 0.11 | |
| | | | p = 0.53) | |
| EARN10 | | | 0.09 | |
| | | | p = 0.66) | |
| EARN11 | | | 0.46 ** | |
| | | | p = 0.01) | |
| EARN12 | | | 0.48 ** | |
| | | | p = 0.01) | |
| EARN13 | | | 0.27 | |
| | | | p = 0.21) | |
| EARN14 | | | 0.31 | |
| | | | p = 0.21) | |
| EARN15 | | | 0.63 ** | |
| | | | p = 0.01) | |
| REARNTY5 | | | -0.17 | |
| | | | p = 0.14) | |
| RELRAISD2 | | | -0.10 | |
| | | | p = 0.37) | |
| RELRAISD3 | | | -0.14 | |
| | | | p = 0.25) | |
| RELRAISD4 | | | 0.05 | |
| | | | p = 0.73) | |
| RELRAISD5 | | | -0.33 | |
| | | | p = 0.05) | |
| RELRAISD6 | | | -0.29 | |
| | | | p = 0.19) | |
| RELRAISD7 | | | -0.38 ** | |
| | | | p = 0.00) | |
| RELRAISD8 | | | -0.19 | |
| | | | p = 0.23) | |
| NUMKDHH5 | | | 0.09 | -0.37 |
| | | | p = 0.84) | p = 0.35) |
| RMARITAL2 | | | 0.18 | |
| | | | p = 0.13) | |
| RMARITAL3 | | | -12.28 | |
| | | | p = 0.96) | |
| RMARITAL4 | | | 0.43 * | |
| | | | p = 0.01) | |
| RMARITAL5 | | | -0.55 | |
| | | | p = 0.06) | |
| RMARITAL6 | | | 0.07 | |
| | | | p = 0.53) | |
| RELCURR2 | | | | 0.15 |
| | | | | p = 0.14) |
| RELCURR3 | | | | 0.35 ** |
| | | | | p = 0.00) |
| RELCURR4 | | | | 0.32 * |
| | | | | p = 0.02) |
| RELCURR5 | | | | -0.12 |
| | | | | p = 0.49) |
| RELCURR6 | | | | 0.12 |
| | | | | p = 0.57) |
| RELCURR7 | | | | 0.02 |
| | | | | p = 0.85) |
| RELCURR8 | | | | -0.14 |
| | | | | p = 0.32) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 5231.28 | 4875.50 | 5631.83 | 5620.58 |
| BIC | 5363.19 | 4998.86 | 6044.00 | 5865.90 |
| Pseudo R2 | 0.23 | 0.18 | 0.24 | 0.22 |

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**Appendix C**
**Table of Variables Associated with IUD Use From 2011-2019**

| | IUD 2017-2019 | IUD 2015-2017 | IUD 2013-2015 | IUD 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -1.98 *** | -2.72 *** | -3.40 *** | -1.90 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| AGER | -0.03 *** | -0.02 * | -0.04 *** | -0.07 *** |
| | p - 0.00) | p - 0.03) | p - 0.00) | p - 0.00) |
| EARN2 | 0.09 | | | 0.40 |
| | p = 0.73) | | | p = 0.11) |
| EARN3 | -0.22 | | | 0.52 * |
| | p = 0.48) | | | p = 0.04) |
| EARN4 | 0.15 | | | 0.58 * |
| | p = 0.54) | | | p = 0.02) |
| EARN5 | -0.35 | | | 0.35 |
| | p = 0.22) | | | p = 0.16) |
| EARN6 | 0.03 | | | 0.62 ** |
| | p = 0.89) | | | p = 0.01) |
| EARN7 | 0.26 | | | 0.45 |
| | p - 0.24) | | | p - 0.06) |
| EARN8 | 0.23 | | | 0.86 *** |
| | p = 0.30) | | | p = 0.00) |
| EARN9 | 0.46 * | | | -0.07 |
| | p - 0.05) | | | p - 0.84) |
| EARN10 | 0.20 | | | 0.89 *** |
| | p = 0.45) | | | p = 0.00) |
| EARN11 | 0.65 ** | | | 1.00 *** |
| | p = 0.00) | | | p = 0.00) |
| EARN12 | 0.43 | | | 0.68 * |
| | p = 0.08) | | | p = 0.03) |
| EARN13 | 0.67 ** | | | -0.00 |
| | p = 0.01) | | | p = 1.00) |
| EARN14 | -0.11 | | | 0.83 * |
| | p = 0.71) | | | p = 0.02) |
| EARN15 | 0.17 | | | 0.31 |
| | p = 0.58) | | | p = 0.40) |
| DRINK122 | 0.35 * | 0.00 | 0.37 * | |
| | p - 0.03) | p - 0.98) | p - 0.02) | |
| DRINK123 | 0.55 *** | 0.24 | 0.62 *** | |
| | p - 0.00) | p - 0.14) | p - 0.00) | |
| DRINK124 | 0.56 *** | 0.27 | 0.78 *** | |
| | p = 0.00) | p = 0.11) | p = 0.00) | |
| DRINK125 | 0.83 *** | 0.32 * | 0.71 *** | |
| | p = 0.00) | p = 0.05) | p = 0.00) | |
| DRINK126 | 0.93 *** | 0.62 ** | 1.05 *** | |
| | p = 0.00) | p = 0.01) | p = 0.00) | |
| REARNTY5 | -0.89 ** | -0.52 * | | -0.85 ** |
| | p = 0.00) | p = 0.05) | | p = 0.00) |
| EVERPREG5 | -0.89 *** | -0.45 * | -0.89 *** | -1.52 *** |
| | p = 0.00) | p = 0.01) | p = 0.00) | p = 0.00) |
| RELCURR2 | -0.20 | -0.38 ** | | |
| | p = 0.14) | p = 0.01) | | |
| RELCURR3 | -0.34 * | -0.54 *** | | |
| | p - 0.03) | p - 0.00) | | |
| RELCURR4 | -0.68 ** | -0.87 ** | | |
| | p = 0.01) | p = 0.00) | | |
| RELCURR5 | -0.37 | -0.49 | | |
| | p - 0.21) | p - 0.07) | | |
| RELCURR6 | 0.21 | -0.46 | | |
| | p = 0.47) | p = 0.17) | | |
| RELCURR7 | -0.21 | -0.47 ** | | |
| | p = 0.13) | p = 0.00) | | |
| RELCURR8 | 0.03 | 0.06 | | |
| | p = 0.88) | p = 0.75) | | |
| NUMKDHH1 | 0.38 * | 0.59 ** | 0.87 *** | 0.71 *** |
| | p = 0.01) | p = 0.00) | p = 0.00) | p = 0.00) |

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| | | | | |
|---|---|---|---|---|
| NUMKDHH1 | 0.38 * | 0.59 ** | 0.87 *** | 0.71 *** |
| | p = 0.01) | p = 0.00) | p = 0.00) | p = 0.00) |
| NUMKDHH2 | 0.42 ** | 1.05 *** | 1.11 *** | 1.24 *** |
| | p = 0.01) | p = 0.00) | p = 0.00) | p = 0.00) |
| NUMKDHH3 | 0.25 | 0.77 *** | 1.20 *** | 0.93 *** |
| | p = 0.22) | p = 0.00) | p = 0.00) | p = 0.00) |
| NUMKDHH4 | 0.29 | 0.81 ** | 0.96 ** | 1.05 *** |
| | p = 0.27) | p = 0.00) | p = 0.00) | p = 0.00) |
| RACE2 | 0.23 | 0.49 *** | 0.47 *** | 0.43 ** |
| | p = 0.06) | p = 0.00) | p = 0.00) | p = 0.00) |
| RACE3 | 0.08 | -0.33 | 0.60 ** | 0.35 |
| | p = 0.70) | p = 0.17) | p = 0.00) | p = 0.08) |
| EDUCAT10 | -0.11 | | | |
| | p = 0.73) | | | |
| EDUCAT11 | -0.38 | | | |
| | p = 0.24) | | | |
| EDUCAT12 | 0.07 | | | |
| | p = 0.76) | | | |
| EDUCAT13 | 0.44 | | | |
| | p = 0.06) | | | |
| EDUCAT14 | 0.43 | | | |
| | p = 0.06) | | | |
| EDUCAT15 | 0.05 | | | |
| | p = 0.85) | | | |
| EDUCAT16 | 0.30 | | | |
| | p = 0.20) | | | |
| EDUCAT17 | 0.84 ** | | | |
| | p = 0.00) | | | |
| EDUCAT18 | 0.45 | | | |
| | p = 0.10) | | | |
| EDUCAT19 | 0.52 | | | |
| | p = 0.07) | | | |
| HIEDUC6 | | -0.03 | 0.40 | 0.03 |
| | | p = 0.95) | p = 0.27) | p = 0.93) |
| HIEDUC7 | | 0.51 | 0.32 | 0.22 |
| | | p = 0.11) | p = 0.36) | p = 0.51) |
| HIEDUC8 | | 1.50 ** | 0.93 | 1.58 ** |
| | | p = 0.01) | p = 0.16) | p = 0.00) |
| HIEDUC9 | | 0.36 | 0.58 * | 0.42 |
| | | p = 0.16) | p = 0.02) | p = 0.08) |
| HIEDUC10 | | 0.61 * | 0.87 *** | 0.42 |
| | | p = 0.02) | p = 0.00) | p = 0.08) |
| HIEDUC11 | | 0.54 | 1.01 *** | 0.79 ** |
| | | p = 0.07) | p = 0.00) | p = 0.00) |
| HIEDUC12 | | 0.90 *** | 0.84 ** | 0.81 ** |
| | | p = 0.00) | p = 0.00) | p = 0.00) |
| HIEDUC13 | | 0.86 ** | 1.26 *** | 0.46 |
| | | p = 0.00) | p = 0.00) | p = 0.17) |
| HIEDUC14 | | 1.02 * | 1.20 * | 0.80 |
| | | p = 0.04) | p = 0.02) | p = 0.16) |
| HIEDUC15 | | 0.64 | 1.18 * | 1.89 *** |
| | | p = 0.25) | p = 0.02) | p = 0.00) |
| NUMKDHH5 | | | 0.97 | 1.17 ** |
| | | | p = 0.05) | p = 0.01) |
| RELRAISD2 | | | | 0.12 |
| | | | | p = 0.54) |
| RELRAISD3 | | | | -0.17 |
| | | | | p = 0.41) |
| RELRAISD4 | | | | 0.26 |
| | | | | p = 0.26) |
| RELRAISD5 | | | | -0.04 |
| | | | | p = 0.89) |
| RELRAISD6 | | | | -0.41 |
| | | | | p = 0.31) |
| RELRAISD7 | | | | -0.07 |
| | | | | p = 0.76) |
| RELRATSD8 | | | | 0.50 * |
| | | | | p = 0.03) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 3402.87 | 3014.76 | 2993.49 | 2866.42 |
| BIC | 3706.28 | 3222.53 | 3159.69 | 3144.90 |
| Pseudo R2 | 0.11 | 0.10 | 0.11 | 0.16 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

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**Appendix D**

**Table of Variables Associated with Implant Use From 2011-2019**

| | Implant 2017-2019 | Implant 2015-2017 | Implant 2013-2015 | Implant 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -0.63 | -0.32 | 0.09 | 0.45 |
| | p = 0.20) | p = 0.55) | p = 0.86) | p = 0.40) |
| AGER | -0.11 *** | -0.12 *** | -0.15 *** | -0.15 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| REARNTY5 | -0.55 * | | | -1.04 * |
| | p = 0.03) | | | p = 0.01) |
| EVERPREG5 | -0.55 * | -1.26 *** | -0.95 ** | -1.73 *** |
| | p = 0.03) | p = 0.00) | p = 0.00) | p = 0.00) |
| NUMKDHH1 | 0.63 * | -0.43 | 0.55 | |
| | p = 0.02) | p = 0.10) | p = 0.07) | |
| NUMKDHH2 | 0.78 ** | 0.02 | 0.89 ** | |
| | p = 0.00) | p = 0.94) | p = 0.00) | |
| NUMKDHH3 | 0.36 | 0.24 | 0.64 | |
| | p = 0.32) | p = 0.45) | p = 0.10) | |
| NUMKDHH4 | 0.78 | -0.91 | 0.06 | |
| | p = 0.05) | p = 0.14) | p = 0.93) | |
| RMARITAL2 | 0.76 ** | 0.85 ** | | |
| | p = 0.00) | p = 0.00) | | |
| RMARITAL3 | -11.44 | -12.05 | | |
| | p = 0.97) | p = 0.98) | | |
| RMARITAL4 | 0.60 | 0.93 * | | |
| | p = 0.10) | p = 0.02) | | |
| RMARITAL5 | -0.17 | 0.03 | | |
| | p = 0.75) | p = 0.96) | | |
| RMARITAL6 | 0.40 | 0.51 * | | |
| | p = 0.08) | p = 0.04) | | |
| RELCURR2 | | -0.59 * | | |
| | | p = 0.03) | | |
| RELCURR3 | | 0.31 | | |
| | | p = 0.31) | | |
| RELCURR4 | | -0.54 | | |
| | | p = 0.32) | | |
| RELCURR5 | | -0.44 | | |
| | | p = 0.49) | | |
| RELCURR6 | | -1.68 | | |
| | | p = 0.06) | | |
| RELCURR7 | | -0.62 * | | |
| | | p = 0.04) | | |
| RELCURR8 | | -0.11 | | |
| | | p = 0.78) | | |
| RELRAISD2 | | 1.04 *** | | |
| | | p = 0.00) | | |
| RELRAISD3 | | 0.28 | | |
| | | p = 0.45) | | |
| RELRAISD4 | | 0.66 | | |
| | | p = 0.16) | | |
| RELRAISD5 | | -0.07 | | |
| | | p = 0.91) | | |
| RELRAISD6 | | 1.28 | | |
| | | p = 0.07) | | |
| RELRAISD7 | | 0.93 * | | |
| | | p = 0.01) | | |
| RELRAISD8 | | 0.38 | | |
| | | p = 0.39) | | |
| NUMKDHH5 | | | -13.01 | |
| | | | p = 0.98) | |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 1765.48 | 1545.25 | 1201.45 | 860.86 |
| BIC | 1851.23 | 1714.06 | 1254.63 | 887.38 |
| Pseudo R2 | 0.07 | 0.11 | 0.09 | 0.09 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

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**Appendix E**

**Table of Variables Associated with Depo-Povera Use From 2011-2019**

| | Depo 2017-2019 | Depo 2015-2017 | Depo 2013-2015 | Depo 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -1.34 ** | -0.76 | 0.52 | 0.45 |
| | p = 0.00) | p = 0.10) | p = 0.10) | p = 0.26) |
| AGER | -0.04 *** | -0.06 *** | -0.08 *** | -0.08 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| RELRAISD2 | -0.57 ** | | | |
| | p = 0.00) | | | |
| RELRAISD3 | -0.29 | | | |
| | p = 0.14) | | | |
| RELRAISD4 | -0.52 | | | |
| | p = 0.08) | | | |
| RELRAISD5 | 0.01 | | | |
| | p = 0.98) | | | |
| RELRAISD6 | -1.35 * | | | |
| | p = 0.03) | | | |
| RELRAISD7 | -0.37 | | | |
| | p = 0.09) | | | |
| RELRAISD8 | -0.37 | | | |
| | p = 0.20) | | | |
| RACE2 | -0.85 *** | -0.80 *** | -0.68 *** | -0.52 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| RACE3 | -0.64 * | -0.49 | -0.84 *** | -0.68 *** |
| | p = 0.02) | p = 0.05) | p = 0.00) | p = 0.00) |
| EDUCAT10 | 0.00 | 0.38 | | |
| | p = 0.98) | p = 0.13) | | |
| EDUCAT11 | -0.15 | 0.39 | | |
| | p = 0.55) | p = 0.11) | | |
| EDUCAT12 | -0.02 | 0.29 | | |
| | p = 0.94) | p = 0.17) | | |
| EDUCAT13 | -0.27 | -0.17 | | |
| | p = 0.27) | p = 0.52) | | |
| EDUCAT14 | -0.52 | -0.09 | | |
| | p = 0.05) | p = 0.73) | | |
| EDUCAT15 | -1.29 ** | -0.08 | | |
| | p = 0.01) | p = 0.82) | | |
| EDUCAT16 | -0.89 ** | -1.02 ** | | |
| | p = 0.00) | p = 0.01) | | |
| EDUCAT17 | -0.82 | -0.88 | | |
| | p = 0.09) | p = 0.15) | | |
| EDUCAT18 | -1.10 * | -2.25 * | | |
| | p = 0.04) | p = 0.03) | | |
| EDUCAT19 | -2.28 * | -0.85 | | |
| | p = 0.03) | p = 0.17) | | |
| RMARITAL2 | 0.80 ** | 0.60 * | | 0.72 *** |
| | p = 0.00) | p = 0.02) | | p = 0.00) |
| RMARITAL3 | 1.21 | 2.13 *** | | 0.48 |
| | p = 0.26) | p = 0.00) | | p = 0.65) |
| RMARITAL4 | 0.60 | 0.64 | | 0.48 |
| | p = 0.13) | p = 0.07) | | p = 0.12) |
| RMARITAL5 | 0.61 | -0.20 | | -0.40 |
| | p = 0.17) | p = 0.71) | | p = 0.37) |
| RMARITAL6 | 0.85 *** | 0.76 *** | | 0.61 ** |
| | p = 0.00) | p = 0.00) | | p = 0.00) |
| EVERPREG5 | | -0.71 *** | -0.79 *** | -0.95 *** |
| | | p = 0.00) | p = 0.00) | p = 0.00) |
| RELCURR2 | | -0.63 ** | | |
| | | p = 0.00) | | |
| RELCURR3 | | 0.05 | | |
| | | p = 0.78) | | |
| RELCURR4 | | -0.09 | | |
| | | p = 0.78) | | |
| RELCURR5 | | -0.85 * | | |
| | | p = 0.04) | | |
| RELCURR6 | | -0.68 | | |
| | | p = 0.16) | | |
| RELCURR7 | | -0.22 | | |
| | | p = 0.24) | | |
| RELCURR8 | | -0.51 | | |
| | | p = 0.07) | | |
| HIEDUC6 | | | 0.09 | -0.59 * |
| | | | p = 0.70) | p = 0.01) |

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| | | | | |
|---|---|---|---|---|
| | | p = 0.07) | | |
| HIEDUC6 | | | 0.09 | -0.59 * |
| | | | p = 0.70) | p = 0.01) |
| HIEDUC7 | | | 0.03 | -0.38 |
| | | | p = 0.88) | p = 0.09) |
| HIEDUC8 | | | 0.33 | -0.59 |
| | | | p = 0.56) | p = 0.35) |
| HIEDUC9 | | | -0.31 | -0.61 *** |
| | | | p = 0.09) | p = 0.00) |
| HIEDUC10 | | | -0.58 ** | -0.83 *** |
| | | | p = 0.00) | p = 0.00) |
| HIEDUC11 | | | -0.52 | -1.26 *** |
| | | | p = 0.06) | p = 0.00) |
| HIEDUC12 | | | -1.28 *** | -1.57 *** |
| | | | p = 0.00) | p = 0.00) |
| HIEDUC13 | | | -2.36 ** | -1.92 ** |
| | | | p = 0.00) | p = 0.00) |
| HIEDUC14 | | | -13.58 | -13.64 |
| | | | p = 0.97) | p = 0.97) |
| HIEDUC15 | | | -0.91 | -13.83 |
| | | | p = 0.38) | p = 0.97) |
| REARNTY5 | | | | -0.25 |
| | | | | p = 0.14) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 2075.51 | 2055.71 | 2437.51 | 2434.81 |
| BIC | 2247.00 | 2231.01 | 2537.23 | 2574.05 |
| Pseudo R2 | 0.12 | 0.15 | 0.11 | 0.13 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

**Appendix G**
**Table of Variables Associated with Patch Use From 2011-2019**

| | Patch 2017-2019 | Patch 2015-2017 | Patch 2013-2015 | Patch 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -3.61 *** | -3.50 *** | -1.85 * | -5.11 *** |
| | p = 0.00) | p = 0.00) | p = 0.04) | p = 0.00) |
| AGER | -0.05 * | -0.06 * | -0.11 *** | |
| | p = 0.03) | p = 0.01) | p = 0.00) | |
| REARNTY5 | -1.68 | | | |
| | p = 0.11) | | | |
| EVERPREG5 | | | -0.95 * | |
| | | | p = 0.03) | |
| RACE2 | | | | -0.06 |
| | | | | p = 0.88) |
| RACE3 | | | | 1.11 * |
| | | | | p = 0.01) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 391.28 | 382.94 | 365.23 | 480.96 |
| BIC | 411.07 | 395.93 | 385.17 | 500.85 |
| Pseudo R2 | 0.02 | 0.02 | 0.04 | 0.02 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

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## Appendix F
## Table of Variables Associated with Emergency Pill Use From 2011-2019

| | Emergency Contreception 2017-2019 | Emergency Contreception 2015-2017 | Emergency Contreception 2013-2015 | Emergency Contreception 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -4.29 *** | -2.91 *** | -4.34 *** | -2.42 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| AGER | -0.09 *** | -0.10 *** | -0.10 *** | -0.12 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| DRINK122 | 0.17 | -0.04 | 0.99 ** | 0.55 |
| | p = 0.57) | p = 0.89) | p = 0.00) | p = 0.06) |
| DRINK123 | 0.39 | 0.67 * | 1.38 *** | 0.69 * |
| | p = 0.19) | p = 0.01) | p = 0.00) | p = 0.02) |
| DRINK124 | 0.80 ** | 0.86 ** | 1.47 *** | 1.12 *** |
| | p = 0.01) | p = 0.00) | p = 0.00) | p = 0.00) |
| DRINK125 | 0.58 * | 0.49 | 1.65 *** | 1.14 *** |
| | p = 0.05) | p = 0.09) | p = 0.00) | p = 0.00) |
| DRINK126 | 1.10 ** | 0.77 | 1.67 *** | 1.94 *** |
| | p = 0.01) | p = 0.09) | p = 0.00) | p = 0.00) |
| REARNTY5 | -0.83 | | -0.67 | |
| | p = 0.05) | | p = 0.06) | |
| RACE2 | 0.10 | | | -0.18 |
| | p = 0.63) | | | p = 0.40) |
| RACE3 | 0.67 * | | | 0.44 |
| | p = 0.03) | | | p = 0.11) |
| EDUCAT10 | 1.33 * | | | 0.38 |
| | p = 0.05) | | | p = 0.43) |
| EDUCAT11 | 0.91 | | | 0.50 |
| | p = 0.20) | | | p = 0.30) |
| EDUCAT12 | 1.38 * | | | 1.36 *** |
| | p = 0.03) | | | p = 0.00) |
| EDUCAT13 | 2.20 *** | | | 1.31 ** |
| | p = 0.00) | | | p = 0.00) |
| EDUCAT14 | 2.34 *** | | | 1.17 ** |
| | p = 0.00) | | | p = 0.01) |
| EDUCAT15 | 2.45 *** | | | 1.76 *** |
| | p = 0.00) | | | p = 0.00) |
| EDUCAT16 | 1.40 * | | | 0.93 |
| | p = 0.04) | | | p = 0.06) |
| EDUCAT17 | 1.80 * | | | 1.57 ** |
| | p = 0.02) | | | p = 0.01) |
| EDUCAT18 | 1.78 * | | | 1.43 * |
| | p = 0.02) | | | p = 0.02) |
| EDUCAT19 | 0.35 | | | 1.70 ** |
| | p = 0.77) | | | p = 0.01) |
| RMARITAL2 | 0.68 | 0.59 | 1.32 *** | |
| | p = 0.10) | p = 0.11) | p = 0.00) | |
| RMARITAL3 | -10.34 | 1.74 | -11.57 | |
| | p = 0.97) | p = 0.11) | p = 0.99) | |
| RMARITAL4 | 1.67 *** | 1.21 ** | 1.31 ** | |
| | p = 0.00) | p = 0.01) | p = 0.01) | |
| RMARITAL5 | 1.47 ** | 1.16 * | 1.95 *** | |
| | p = 0.01) | p = 0.04) | p = 0.00) | |
| RMARITAL6 | 1.25 *** | 1.03 *** | 1.51 *** | |
| | p = 0.00) | p = 0.00) | p = 0.00) | |
| EVERPREG5 | | -0.30 | | |
| | | p = 0.15) | | |
| HIEDUC6 | | -0.03 | 0.65 | |
| | | p = 0.95) | p = 0.26) | |
| HIEDUC7 | | 0.75 | 1.11 * | |
| | | p = 0.13) | p = 0.03) | |
| HIEDUC8 | | -12.72 | 1.60 | |
| | | p = 0.99) | p = 0.16) | |
| HIEDUC9 | | 1.16 ** | 0.95 | |
| | | p = 0.01) | p = 0.06) | |
| HIEDUC10 | | 1.56 *** | 1.51 ** | |
| | | p = 0.00) | p = 0.00) | |
| HIEDUC11 | | 1.34 * | 1.74 ** | |
| | | p = 0.02) | p = 0.00) | |
| HIEDUC12 | | 1.53 ** | 1.62 ** | |
| | | p = 0.00) | p = 0.00) | |
| HIEDUC13 | | 1.43 * | 1.52 * | |
| | | p = 0.02) | p = 0.01) | |
| HIEDUC14 | | 3.03 *** | -12.11 | |
| | | p = 0.00) | p = 0.98) | |
| HIEDUC15 | | -12.01 | -12.30 | |
| RELCURR2 | | | | 0.60 * |
| | | | | p = 0.01) |
| RELCURR3 | | | | -0.08 |
| | | | | p = 0.80) |
| RELCURR4 | | | | -0.08 |
| | | | | p = 0.85) |
| RELCURR5 | | | | -0.08 |
| | | | | p = 0.87) |
| RELCURR6 | | | | 0.82 |
| | | | | p = 0.05) |
| RELCURR7 | | | | 0.58 * |
| | | | | p = 0.03) |
| RELCURR8 | | | | -0.42 |
| | | | | p = 0.37) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 1262.15 | 1273.94 | 1517.62 | 1359.27 |
| BIC | 1427.04 | 1423.28 | 1670.52 | 1531.66 |
| Pseudo R2 | 0.13 | 0.10 | 0.15 | 0.12 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

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**Appendix H**

**Table of Variables Associated with Ring Use From 2011-2019**

| | Ring 2017-2019 | Ring 2015-2017 | Ring 2013-2015 | Ring 2011-2013 |
|---|---|---|---|---|
| (Intercept) | -5.44 *** | -4.22 *** | -3.63 *** | -1.59 * |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.01) |
| AGER | -0.02 | -0.08 *** | -0.03 ** | -0.11 *** |
| | p = 0.13) | p = 0.00) | p = 0.01) | p = 0.00) |
| DRINK122 | 0.79 | -0.22 | 0.15 | |
| | p = 0.11) | p = 0.61) | p = 0.67) | |
| DRINK123 | 0.49 | 0.34 | 0.65 | |
| | p = 0.37) | p = 0.38) | p = 0.05) | |
| DRINK124 | 1.00 * | 0.55 | 1.21 *** | |
| | p = 0.05) | p = 0.15) | p = 0.00) | |
| DRINK125 | 1.66 *** | 0.89 * | 1.39 *** | |
| | p = 0.00) | p = 0.01) | p = 0.00) | |
| DRINK126 | 1.07 | 1.25 ** | 0.66 | |
| | p = 0.10) | p = 0.01) | p = 0.25) | |
| REARNTY5 | -15.03 | | | -1.08 * |
| | p = 0.97) | | | p = 0.03) |
| RACE2 | 1.25 ** | 0.38 | | 0.48 |
| | p = 0.00) | p = 0.17) | | p = 0.05) |
| RACE3 | 0.51 | -1.15 | | 0.17 |
| | p = 0.47) | p = 0.13) | | p = 0.64) |
| NUMKDHH1 | | -0.03 | | |
| | | p = 0.92) | | |
| NUMKDHH2 | | 0.83 ** | | |
| | | p = 0.00) | | |
| NUMKDHH3 | | 0.18 | | |
| | | p = 0.73) | | |
| NUMKDHH4 | | 0.82 | | |
| | | p = 0.14) | | |
| HIEDUC6 | | -14.26 | | |
| | | p = 0.98) | | |
| HIEDUC7 | | 0.97 | | |
| | | p = 0.27) | | |
| HIEDUC8 | | -13.78 | | |
| | | p = 1.00) | | |
| HIEDUC9 | | 1.33 | | |
| | | p = 0.08) | | |
| HIEDUC10 | | 1.79 * | | |
| | | p = 0.02) | | |
| HIEDUC11 | | 1.87 * | | |
| | | p = 0.02) | | |
| HIEDUC12 | | 1.90 * | | |
| | | p = 0.02) | | |
| HIEDUC13 | | 2.12 * | | |
| | | p = 0.01) | | |
| HIEDUC14 | | -13.72 | | |
| | | p = 0.99) | | |
| HIEDUC15 | | 3.62 *** | | |
| | | p = 0.00) | | |
| EVERPREG5 | | | | -0.69 ** |
| | | | | p = 0.00) |
| EDUCAT10 | | | | -0.31 |
| | | | | p = 0.62) |
| EDUCAT11 | | | | -1.03 |
| | | | | p = 0.20) |
| EDUCAT12 | | | | 0.60 |
| | | | | p = 0.15) |
| EDUCAT13 | | | | 0.70 |
| | | | | p = 0.12) |
| EDUCAT14 | | | | 1.08 * |
| | | | | p = 0.02) |
| EDUCAT15 | | | | 1.13 * |
| | | | | p = 0.03) |
| EDUCAT16 | | | | 1.09 * |
| | | | | p = 0.02) |
| EDUCAT17 | | | | 1.76 ** |
| | | | | p = 0.00) |
| EDUCAT18 | | | | 0.75 |
| | | | | p = 0.29) |
| EDUCAT19 | | | | 2.12 *** |
| | | | | p = 0.00) |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 733.60 | 877.24 | 1124.34 | 1139.73 |
| BIC | 799.56 | 1026.58 | 1170.87 | 1245.81 |
| Pseudo R2 | 0.07 | 0.10 | 0.04 | 0.07 |

*** p < 0.001; ** p < 0.01; * p < 0.05.

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**Appendix I**

**Table of Variables Associated with Contraception Use From 2011-2019**

| | Contraception 2017-2019 | Contraception 2015-2017 | Contraception 2013-2015 | Contraception 2011-2013 |
|---|---|---|---|---|
| (Intercept) | 1.58 *** | 1.37 *** | 1.32 *** | 1.96 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| AGER | -0.09 *** | -0.08 *** | -0.09 *** | -0.11 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| EARN2 | 0.03 | | | |
| | p = 0.82) | | | |
| EARN3 | 0.14 | | | |
| | p = 0.38) | | | |
| EARN4 | -0.00 | | | |
| | p = 0.98) | | | |
| EARN5 | -0.22 | | | |
| | p = 0.12) | | | |
| EARN6 | -0.02 | | | |
| | p = 0.91) | | | |
| EARN7 | -0.13 | | | |
| | p = 0.31) | | | |
| EARN8 | 0.07 | | | |
| | p = 0.60) | | | |
| EARN9 | 0.25 | | | |
| | p = 0.09) | | | |
| EARN10 | 0.27 | | | |
| | p = 0.10) | | | |
| EARN11 | 0.52 *** | | | |
| | p = 0.00) | | | |
| EARN12 | 0.33 * | | | |
| | p = 0.04) | | | |
| EARN13 | 0.56 ** | | | |
| | p = 0.00) | | | |
| EARN14 | 0.30 | | | |
| | p = 0.10) | | | |
| EARN15 | 0.38 | | | |
| | p = 0.06) | | | |
| DRINK122 | 0.00 | -0.14 | 0.01 | 0.19 * |
| | p = 0.96) | p = 0.14) | p = 0.93) | p = 0.03) |
| DRINK123 | 0.17 | 0.19 | 0.28 ** | 0.17 |
| | p = 0.08) | p = 0.06) | p = 0.00) | p = 0.07) |
| DRINK124 | 0.32 ** | 0.12 | 0.51 *** | 0.30 ** |
| | p = 0.00) | p = 0.27) | p = 0.00) | p = 0.00) |
| DRINK125 | 0.29 ** | 0.31 ** | 0.40 *** | 0.40 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| DRINK126 | 0.30 * | 0.38 * | 0.07 | 0.40 * |
| | p = 0.05) | p = 0.02) | p = 0.65) | p = 0.02) |
| REARNTY5 | -0.22 | | -0.28 ** | -0.19 |
| | p = 0.05) | | p = 0.01) | p = 0.07) |
| RACE2 | 0.40 *** | 0.25 ** | 0.37 *** | 0.29 *** |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.00) |
| RACE3 | 0.35 ** | -0.29 * | 0.00 | 0.20 * |
| | p = 0.00) | p = 0.02) | p = 0.99) | p = 0.05) |
| EDUCAT10 | 0.19 | 0.14 | 0.12 | -0.10 |
| | p = 0.20) | p = 0.35) | p = 0.77) | p = 0.45) |
| EDUCAT11 | -0.15 | 0.26 | 0.64 | -0.18 |
| | p = 0.32) | p = 0.08) | p = 0.09) | p = 0.21) |
| EDUCAT12 | -0.05 | 0.23 | 0.61 * | 0.05 |
| | p = 0.69) | p = 0.05) | p = 0.02) | p = 0.67) |
| EDUCAT13 | 0.27 | 0.32 * | 0.24 | 0.17 |
| | p = 0.05) | p = 0.02) | p = 0.85) | p = 0.17) |
| EDUCAT14 | 0.21 | 0.48 *** | 0.45 | 0.49 *** |
| | p = 0.13) | p = 0.00) | p = 0.73) | p = 0.00) |
| EDUCAT15 | 0.14 | 0.77 *** | 0.53 | 0.41 * |
| | p = 0.41) | p = 0.00) | p = 0.68) | p = 0.01) |
| EDUCAT16 | 0.24 | 0.83 *** | 0.47 | 0.58 *** |
| | p = 0.08) | p = 0.00) | p = 0.72) | p = 0.00) |
| EDUCAT17 | 0.70 *** | 0.92 *** | 0.36 | 0.62 ** |
| | p = 0.00) | p = 0.00) | p = 0.78) | p = 0.00) |
| EDUCAT18 | 0.42 * | 0.67 *** | -0.09 | 0.71 *** |
| | p = 0.02) | p = 0.00) | p = 0.94) | p = 0.00) |
| EDUCAT19 | 0.34 | 0.72 *** | -0.15 | 0.79 *** |
| | p = 0.07) | p = 0.00) | p = 0.91) | p = 0.00) |
| RMARITAL2 | 0.35 *** | 0.35 ** | 0.44 *** | 0.23 * |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.02) |
| RMARITAL3 | 0.55 | -0.03 | -0.48 | -0.65 |
| | p = 0.31) | p = 0.95) | p = 0.55) | p = 0.33) |
| RMARITAL4 | 0.43 ** | 0.31 * | 0.52 *** | 0.08 |
| | p = 0.00) | p = 0.04) | p = 0.00) | p = 0.55) |
| RMARITAL5 | 0.19 | 0.05 | 0.02 | -0.38 * |
| | p = 0.30) | p = 0.78) | p = 0.90) | p = 0.03) |
| RMARITAL6 | 0.35 *** | 0.32 *** | 0.28 ** | 0.09 |
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.32) |
| RELCURR2 | | -0.17 | | |
| | | p = 0.06) | | |

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| | | | | |
|---|---|---|---|---|
| | p = 0.00) | p = 0.00) | p = 0.00) | p = 0.32) |
| RELCURR2 | | -0.17 | | |
| | | p = 0.06) | | |
| RELCURR3 | | -0.16 | | |
| | | p = 0.10) | | |
| RELCURR4 | | -0.22 | | |
| | | p = 0.15) | | |
| RELCURR5 | | -0.30 | | |
| | | p = 0.07) | | |
| RELCURR6 | | -0.30 | | |
| | | p = 0.14) | | |
| RELCURR7 | | -0.36 *** | | |
| | | p = 0.00) | | |
| RELCURR8 | | -0.05 | | |
| | | p = 0.67) | | |
| NUMKDHH1 | | 0.15 | 0.30 ** | 0.16 * |
| | | p = 0.09) | p = 0.00) | p = 0.05) |
| NUMKDHH2 | | 0.31 *** | 0.39 *** | 0.36 *** |
| | | p = 0.00) | p = 0.00) | p = 0.00) |
| NUMKDHH3 | | -0.03 | 0.35 ** | 0.03 |
| | | p = 0.83) | p = 0.01) | p = 0.81) |
| NUMKDHH4 | | -0.25 | 0.06 | 0.18 |
| | | p = 0.16) | p = 0.75) | p = 0.32) |
| EVERPREG5 | | | 0.31 ** | |
| | | | p = 0.00) | |
| NUMKDHH5 | | | -0.01 | 0.08 |
| | | | p = 0.97) | p = 0.78) |
| HIEDUC6 | | | -0.27 | |
| | | | p = 0.53) | |
| HIEDUC7 | | | -0.84 * | |
| | | | p = 0.04) | |
| HIEDUC8 | | | -0.83 | |
| | | | p = 0.10) | |
| HIEDUC9 | | | -0.66 * | |
| | | | p = 0.02) | |
| HIEDUC10 | | | -0.17 | |
| | | | p = 0.89) | |
| HIEDUC11 | | | -0.17 | |
| | | | p = 0.90) | |
| HIEDUC12 | | | 0.03 | |
| | | | p = 0.98) | |
| HIEDUC13 | | | 0.73 | |
| | | | p = 0.58) | |
| HIEDUC14 | | | 0.61 | |
| | | | p = 0.65) | |
| HIEDUC15 | | | 0.52 | |
| | | | p = 0.70) | |
| N | 5409 | 4879 | 5698 | 5599 |
| AIC | 6818.65 | 6244.47 | 7091.87 | 6942.74 |
| BIC | 7075.89 | 6471.71 | 7364.43 | 7141.65 |
| Pseudo R2 | 0.17 | 0.15 | 0.18 | 0.18 |

*** p < 0.001; ** p < 0.01; * p < 0.05.