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# Which women are missed by primary health-care based interventions for alcohol and drug use?

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## Abstract

**Background—**Women of reproductive age who binge drink or have alcohol-related problem symptoms (APS) and who do not use contraception are considered at risk of an alcohol-exposed pregnancy (AEP). In the U.S., efforts to prevent AEPs focus largely on delivering interventions in primary health care settings. While research suggests that these interventions are efficacious for women reached, it is unclear to what extent these interventions are likely to reach women at risk of AEPs.

**Methods—**Data are from the Turnaway Study, a study of 956 women seeking pregnancy termination at 30 U.S. facilities between 2008 and 2010, some of whom received and some of whom were denied terminations because they were past the gestational limit. We examined associations between binge drinking, APS, and drug use prior to pregnancy recognition and having a usual source of health care (USOC).

**Results—**Overall, 59% reported having a USOC. A smaller proportion with than without an APS reported a USOC (44 vs. 60%, $p<.05$) and a smaller proportion using than not using drugs reported a USOC (51 vs 61%, $p<.05$). This pattern was not observed for binge drinking. In multivariate analyses, an APS continued to be associated with lack of a USOC, while drug use was no longer associated with lack of a USOC.

**Conclusions—**As more than 40% did not have a USOC, with higher proportions among women with an APS, primary health-care based approaches to AEP prevention seem unlikely to reach the majority of women who have an APS and are at risk of an unintended pregnancy.

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**Contributors** S.C.M. Roberts developed study questions for this paper, guided the statistical analysis, oversaw interpretation of statistical results, wrote the introduction and discussion, and managed the revision process. L.J. Ralph conducted analyses, interpreted statistical results, drafted the methods and results, and contributed to revising the article. S.C. Wilsnack contributed to revising the article. D.G. Foster designed the Turnaway Study, helped refine study questions for this paper, and contributed to revising the article.

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**Keywords**

Alcohol; illicit drug use; pregnancy

## Introduction

Women of reproductive age who drink alcohol – especially those who binge drink or have alcohol-related problem symptoms – and who do not use contraception are considered to be at risk of having an alcohol-exposed pregnancy (AEP). Alcohol-exposed pregnancies are of concern, as alcohol is a known teratogen that causes fetal alcohol syndrome and a range of other harms to the fetus (1-4). While there is no known safe level of alcohol consumption during pregnancy, women who drink heavily and in binge patterns are at higher risk of adverse effects (2, 5-9)

Most women, including women with unintended or unwanted pregnancies, reduce or stop drinking upon discovering pregnancy (10-13). Yet, as emphasized by organizations working to prevent AEPs, many women do not discover their pregnancies until midway through the first trimester (14). Thus, even if women reduce or eliminate alcohol use upon discovering pregnancy, this reduction often occurs after some negative effects related to alcohol exposure may have already occurred.

As a strategy to reduce the frequency of AEPs, the U.S. Centers for Disease Control and Prevention has developed and promoted an intervention called Project CHOICES (15). Project CHOICES seeks to identify women in the preconception period who are considered at risk of an AEP and deliver brief interventions about the importance of reducing binge or problematic drinking, increasing use of effective contraception, or both (16). Project CHOICES has been shown to reduce drinking, increase use of effective contraception, or both (16). The primary focus has been on delivering the Project CHOICES intervention in primary health care settings, including community health centers, private primary care offices, and gynecologic clinics (17), the types of settings in which general practitioners provide care.

Previous studies have established that about 4 – 9% of women in primary care and gynecologic clinic settings are at risk of an AEP (16, 18), indicating that delivering AEP-prevention interventions in these settings will reach some of the intended population. However, the success of these interventions on a population-level depends on what proportion of women at risk of an AEP have a usual source of primary or gynecologic care. If a large proportion of women at risk of an AEP do not have a usual source of care, the current focus on primary health care delivery of these interventions may be misplaced. Thus, research examining whether women at greatest risk of an AEP are likely to be reached by a health-care based intervention is warranted.

While other interventions address both alcohol and drug use during pregnancy (19, 20), to date, Project CHOICES-like interventions have not been tested or developed for women who use drugs. Hesitance to apply the Project CHOICES model to drug use likely stems from the existence of heavily criticized interventions in the U.S. that pay women who use

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drugs to use long-acting reversible or permanent contraception, a court system that uses such contraception methods as part of women's punishment for using drugs (21-23), and the lack of evidence for specific irreversible harms associated with the drugs most commonly used during pregnancy (24, 25). Thus, the absence of a Project CHOICES approach for prevention of drug use during pregnancy is understandable. However, the American College of Obstetrics and Gynecology does recommend providing brief interventions about drug use to women of reproductive age (26). Also, supporting women to stop drug use prior to pregnancy may be able to help them avoid the risks of being reported to Child Protective Services or of being prosecuted that they might face if they continued to use drugs during pregnancy (21, 27, 28). As previous research indicates that women who use drugs during pregnancy are less likely than other pregnant women to receive early and adequate prenatal health care (29-32), examining whether women who use drugs and may become pregnant are likely to be reached by primary health care based interventions also seems warranted.

To begin to fill these gaps, this paper uses data from a study of women with unwanted pregnancies (defined here as pregnancies they sought to terminate) to:

**1)** Examine associations between binge drinking, alcohol-related problem symptoms, and drug use prior to pregnancy recognition and having a usual source of health care

**2)** Seek to identify factors associated with not having a usual source of care among women who report binge drinking, having an alcohol-related problem symptom, or using drugs prior to pregnancy recognition

## Methods

### Data

This study uses baseline interview data from the Turnaway Study, a prospective cohort study of women seeking pregnancy termination at 30 U.S. facilities between 2008 and 2010. The Turnaway Study was designed to assess the effects of receiving versus being denied a pregnancy termination on women's physical, mental, and socio-economic well-being. Potential recruitment sites were identified using the National Abortion Federation directory of pregnancy termination providers. Eligible sites had the highest gestational age limit of any provider within 150 miles. Details about the study sites have been described in detail elsewhere (33-35).

Women were eligible to participate if they presented for pregnancy termination care (1) up to three weeks over a facility's gestational age limit and were denied care ('Turnaways'), (2) up to two weeks under the limit and received a termination ('Near Limit Termination Group'), or (3) under the limit, in the first trimester of pregnancy, and received a pregnancy termination ('First Trimester Group'). Gestational age limits varied by clinic due to both facility-level and state-specific restrictions, and ranged from 10 weeks to the end of the second trimester. Eligibility was also restricted to English- or Spanish-speaking women, aged 15 years or older, with no known fetal anomalies or demise.

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Among eligible women approached to participate, 37.5% (n=1132) consented. Of those who consented, 84.5% (n=956) completed a baseline interview. Although not the focus of the analyses presented in this paper, after the baseline interview, interviews were repeated every six months for a period of 5 years. All study activities were approved by the University of California, San Francisco Committee for Human Research.

For the current analysis, we utilize data from the baseline interview. We combine women from all three study groups for all analyses.

## Measures

**Usual source of care—**Women's response to the question "Is there a specific place like a clinic or doctor's office you usually go to when you are sick or want advice about your health" was used to generate our primary outcome of interest: having a usual source of health care (USOC). Women who responded doctor's office, clinic, health department clinic, or Planned Parenthood clinic were classified as having a USOC. Women who responded that this place was an emergency room, hospital, or urgent care center, or who responded that they didn't know of a place, were classified as not having a USOC.

**Alcohol and drug use—**Women were asked to describe their alcohol and drug use in the month before they discovered they were pregnant. Binge drinking was defined as consuming five or more drinks on a single occasion one or more times during the month before discovering pregnancy. Having an alcohol problem symptom (APS) was defined as reporting having a drink first thing in the morning to steady their nerves or get rid of hangover (eye-opener), or being unable to remember what happened the night before because of drinking (black out) one or more times during the month before discovering pregnancy. Drug use was defined as use of any illicit drug or prescription drug used for recreational purposes, including marijuana one or more times during the month before discovering pregnancy.

**Other covariates—**As covariates we used several measures of social and demographic characteristics, including age, race/ethnicity (white, African American, Hispanic/Latina, and other), marital status (single, married, or divorced/separated), and parity (having had at least one child vs. no children). We considered employment status (full time vs. part time vs. unemployed) and whether or not the participant had health insurance. We also included receipt of various forms of public assistance (Temporary Assistance to Needy Families, the Women, Infants, and Children Program, Food Stamps, and Disability) programs as a proxy for her socioeconomic status, as many women did not report their household income.

## Analysis

We assessed differences in participant characteristics by whether or not they had a USOC using a series of bivariate mixed effects linear and logistic regression models. When overall differences were detected, we also assessed differences within levels of covariates. We assessed bivariate differences in the proportion of women reporting a USOC by each of the three alcohol or drug use measures (APS, binge drinking, drug use). For our multivariate analysis, we constructed mixed effects regression models to predict the odds of having a

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USOC by each exposure of interest: binge drinking, APS, and drug use. Finally, we constructed a separate mixed effects regression model to examine the odds of having a USOC among the subpopulation of women (n=300) who reported at least one of the alcohol or drug use behaviors prior to pregnancy recognition. All analyses included random site effects to account for the clustering of participants by facilities and were conducted in Stata 13.0 (Stata Corps, College Station, TX).

## Results

The final sample was limited to women who answered the question about having a USOC (N=942, 98.5% of the full sample). The mean age of women in this sample was 25.0 years. The sample was racially and ethnically diverse; about two-fifths of the sample was White (37%), a little less than one-third Black (29%), and one-fifth Hispanic/Latina (21%). The majority of participants (79%) were single and had at least one child (62%). Just over one-half (53%) were employed either full or part time, and the majority (71%) were insured. Just over 4 in 10 women (43%) received some form of public assistance, including 11% receiving Temporary Assistance for Needy Families, 14% receiving Women, Infants, and Children Program, 32% receiving food stamps, and 4% receiving disability.

Overall, 59% of women reported having a USOC. Women who reported having a USOC were slightly older than those without a USOC (mean age 25.4 vs. 24.3, p=0.002). They were also more likely to be employed full time (36 vs. 27%, p=0.003) and to have health insurance (75 vs. 65%, p<0.000). Black women were significantly less likely to report having a USOC than white women (p=0.010) [Table 1].

A smaller proportion of women with an alcohol problem symptom (APS) pre-pregnancy recognition reported having a USOC than women without an APS (44 vs. 60%) [Figure 1], and this difference was statistically significant at p=0.013 in bivariate analyses [Table 2]. Women who reported using drugs prior to pregnancy recognition were also less likely than women who did not report using drugs to have a USOC (51 vs. 61%, p=0.045). This pattern was not observed for binge drinkers; a similar proportion of women who reported binge drinking pre-pregnancy recognition had a USOC as compared to women who did not binge drink (56 vs. 60%, p=0.204) [Figure 1, Table 2].

In multivariate analyses adjusted for age, race/ethnicity, parity, marital status, employment, insurance and receipt of public assistance, women with an alcohol problem symptom remained less likely to have a USOC (aOR=0.51, 95% CI: 0.29, 0.89). In separate models, women who reported drug use (aOR=0.71, 95% CI: 0.49, 1.04) or binge drinking (aOR=0.89, 95% CI: 0.64, 1.24) had reduced odds of having a USOC; however, these differences were not statistically significant [Table 3].

In a final multivariate model restricted to women who reported at least one of the alcohol or drug use behaviors prior to pregnancy recognition [Table 3], only having health insurance was significantly and positively associated with having a USOC (aOR=2.55, 95% CI: 1.50, 4.33).

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## Discussion

Primary health care-based approaches are a central strategy in the U.S. to prevent alcohol- (and other substance-) exposed pregnancies (26). In our sample of women experiencing an unintended pregnancy, more than 40% did not have a usual source of health care. While similar proportions of those who binge drank and those who did not binge drink prior to pregnancy recognition had usual sources of health care, almost three-fifths of women reporting alcohol problem symptoms and half of women reporting drug use prior to pregnancy recognition did not have a usual source of health care, higher than those without alcohol problem symptoms and without drug use. Thus, these groups of women are especially unlikely to be reached by primary health-care based approaches to substance use intervention and substance-exposed pregnancy prevention.

It is worth noting, though, that the association between drug use and having a usual source of care was attenuated once other social and economic factors were controlled. These findings are consistent with research that has found that while drug use itself and fear of being punished for drug use is a reason some pregnant women do not attend prenatal care, low-income women who use drugs face similar barriers to prenatal health care to low-income women in general (27). In contrast, we found that the association between having an alcohol problem symptom and having a usual source of care was still strong even after social and economic factors were controlled. It is thus possible that something about having an alcohol-problem symptom contributes to women not having a usual source of health care. Alternatively, it is possible that women who have a usual source of health care have received interventions that reduce their risk of having an alcohol-problem symptom.

Regarding insurance status as the only statistically significant predictor of having a usual source of care among women at risk of having a substance-exposed pregnancy, more research is warranted to assess whether the Affordable Care Act (passed in 2010 to expand insurance coverage as well as ensure that people have a medical home, or usual source of health care) has reduced this barrier to care among this population and thus whether more women who use alcohol and drugs now have a usual source of care. If not, additional research is needed to identify and address barriers to having a USOC among women at risk of an AEP.

Separate from strategies to increase the proportion of women at risk for an AEP who have a USOC, one option is to locate health-care based approaches to substance use intervention and substance-exposed pregnancy prevention in pregnancy-termination facilities. A recent study found acceptability among patients for screening and intervention services for substance use in pregnancy termination facilities (36). To our knowledge, there is no published research about the efficacy of screening and intervention services for substance use during pregnancy or for preventing a future AEP in pregnancy termination facilities. Results from this research would be necessary to justify implementing substance use screening and interventions in pregnancy termination facilities. As women already struggle to gather the money they need to pay out-of-pocket for pregnancy termination (37, 38), providers cannot pass increased costs associated with providing a new service such as substance abuse screening and intervention on to patients. If termination facilities are going

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to be considered as sites to provide more comprehensive health care, strategies to have third-party payers pay adequate amounts for these additional services need to also be considered.

There are a number of limitations worth noting. First, all substance use data and usual source of care data are self-reported. It is possible that desire to report healthy behaviors at least partially explains the associations between lack of alcohol problem symptoms and having a usual source of care and between lack of drug use and having a usual source of care. Second, having a usual source of care does not provide information about how often women used that source of care or whether they trusted their health care provider. However, as these health care-based interventions are provided in primary care settings, women who do not have a usual source of care are unlikely to receive interventions provided in these settings. Also, having a usual source of care may indicate an element of trust between women and their providers. As trust between women and health care providers is a key component of the context in which health care-based interventions for substance use can be successful (39), examining usual source of care as an outcome makes sense. Third, we did not ask women whether they had been in jail, to an STD clinic, or to substance abuse treatment in the months prior to their pregnancy. It is possible that some of the women who did not report a USOC could be reached by interventions in these settings, as Project CHOICES has also been tested and delivered in these settings (17). Fourth, our binge drinking measure defined binge drinking as 6 or more drinks as opposed to the more typical 5 or more or even 4 or more for women (40, 41). Fifth, our study included only two possible alcohol problem symptom indicators – eye-opener and blackout – and thus may exclude women who have other problem symptoms. Sixth, the response rate is lower than typical for one-time surveys. It is likely a consequence of the study requesting contact information and including 11 interviews over five years. As only 3% of potential participants declined participation after going through the informed consent process and learning that surveys would include questions about substance use (33), it is unlikely that non-participation is related to substance use.

Another consideration is that most of the women in the sample terminated their pregnancies. Thus, their alcohol use prior to pregnancy recognition did not have an adverse effect on an infant or child. However, 17% were unable to terminate their pregnancies and thus had a live birth (42, 43). As a result of the quasi-experimental study design, characteristics of those who terminated pregnancies were very similar to those denied terminations and who had live births – e.g. groups did not differ in either alcohol or drug use prior to pregnancy recognition (42, 43). We also note that estimates based on data from 2008-2010 suggest that about 4000 women per year in the U.S. are unable to terminate pregnancies because of gestational limits (34). With recent increases in laws restricting pregnancy termination services in U.S. states, the number of women unable to terminate their pregnancies is expected to increase. We note that it is unclear whether these findings are generalizable to pregnant women in prenatal care settings. Additional research is warranted to assess whether pregnant women in prenatal care settings who have an AEP had a usual source of care prior to becoming pregnant. If they did, this would suggest that the clinical content of the care is what needs improvement. If they did not, this would again suggest that attention to strategies to engage women in health care may be a more urgent priority.

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## Conclusions

Primary health care-based approaches to alcohol-exposed pregnancy prevention seem unlikely to reach the majority of women who have an alcohol-problem symptom and are at risk of an unintended pregnancy. While pregnancy termination facilities have been explored as possible sites for substance use interventions (36), the lack of insurance payment for routine health care services provided at pregnancy termination facilities needs to be addressed before this could be considered as a workable approach.

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## Highlights

- 59% of women seeking a pregnancy termination had a usual source of health care (UCOC)
- Some of these women were unable to terminate their pregnancies and gave birth
- Fewer women with than without an alcohol problem symptom reported having a USOC
- Interventions to prevent alcohol exposed pregnancies may not be reaching women at risk

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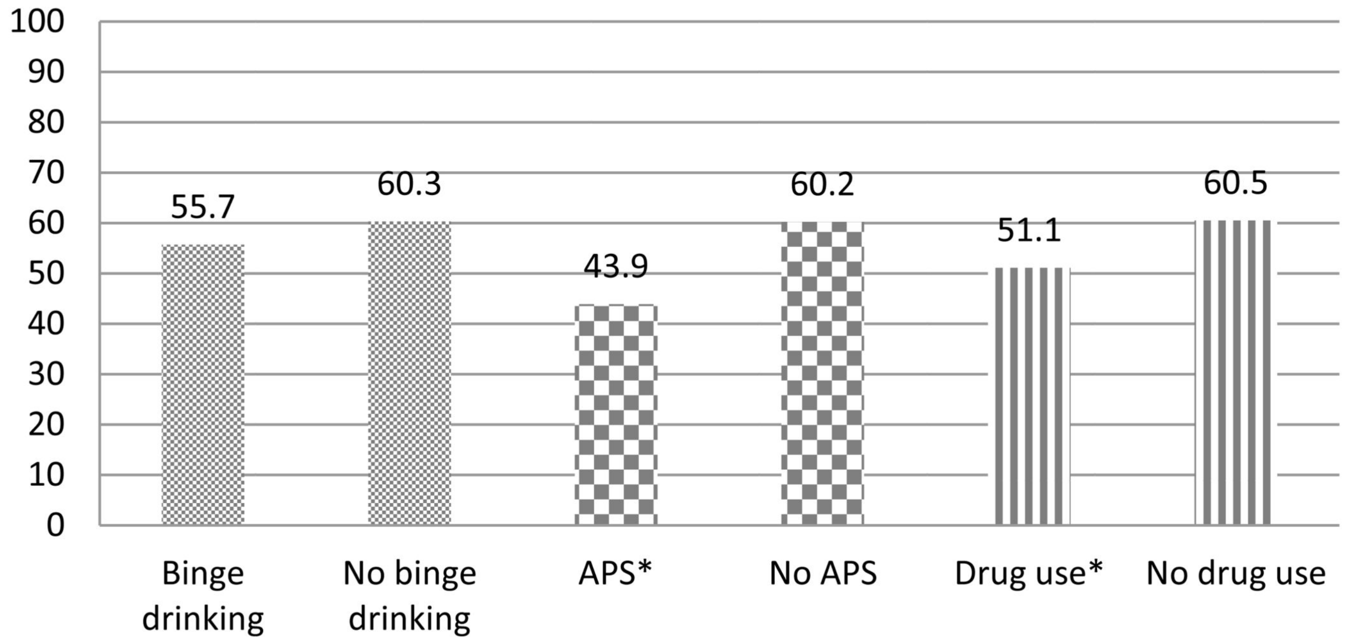


**Figure 1. Proportion of women who report having a usual source of care, by binge drinking, alcohol problem symptoms (APS), and drug use**

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**Table 1**

**Demographic profile of women in the study sample by usual source of care, N=942^**

| | Full sample | Has a usual source of care& | No usual source of care& | p value* |
|---|---|---|---|---|
| **n (%)** | **942 (100)** | **557 (59)** | **385 (41)** | |
| Age, mean[SD] | 25.0 [5.8] | 25.4 [6.0] | 24.3 [5.4] | 0.002 |
| Race/ethnicity | | | | 0.048 |
| White | 350 (37) | 204 (58) | 146 (42) | |
| Black | 279 (29) | 180 (65) | 99 (35) | |
| Hispanic/Latina | 196 (21) | 109 (56) | 87 (44) | |
| Other | 117 (12) | 64 (55) | 53 (45) | |
| Highest level of education | | | | 0.038 |
| Less than high school (HS) | 184 (20) | 102 (55) | 82 (45) | |
| HS diploma or General Educational Development (GED) certificate | 313 (33) | 170 (54) | 143 (46) | |
| 2- year associate's degree, some college, or technical school | 372 (40) | 236 (63) | 136 (37) | |
| 4-year college degree | 73 (8) | 49 (67) | 24 (33) | |
| Marital status | | | | 0.775 |
| Single, never married | 743 (79) | 434 (58) | 309 (42) | |
| Married | 84 (9) | 51 (61) | 33 (39) | |
| Separated, widowed, divorced | 115 (12) | 72 (63) | 43 (37) | |
| Employment | | | | 0.008 |
| Full time | 302 (32) | 200 (66) | 102 (34) | |
| Part time | 200 (21) | 106 (53) | 94 (47) | |
| Not currently employed | 440 (47) | 251 (57) | 189 (43) | |
| Insured | 667 (71) | 418 (63) | 249 (37) | <0.000 |
| Parity | | | | 0.312 |
| Nulliparous | 354 (38) | 201 (57) | 153 (43) | |
| 1+ child | 588 (62) | 356 (61) | 232 (39) | |
| Receives public assistance | 407 (43) | 249 (61) | 158 (39) | 0.340 |

^The study sample includes all women in the Turnaway study who responded to the question about having a usual source of care (98.5% of the full sample);

*p-value from post-estimation permutation test on models that account for clustering by site;

&Usual source of care (USOC) operationalized as a dichotomous variable where 0 = reported no USOC or reported an ER, urgent care, or hospital as USOC and 1= doctor's office, health department, Planned Parenthood, or other clinic cited as USOC; Receives public assistance includes temporary assistance to needy families, the Women, Infants, and Children Program, food stamps, and disability.

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## Table 2

### Relationship between each drug or alcohol behavior and usual source of care

| | Bivariate | | Multivariate^ | |
|---|---|---|---|---|
| | OR (95% CI) | p-value | aOR (95% CI) | |
| Alcohol problem symptom | 0.50 (0.29, 0.86) | 0.013 | 0.51 (0.29, 0.89) | 0.017 |
| Binge drinking | 0.82 (0.60, 1.11) | 0.204 | 0.89 (0.64, 1.24) | 0.503 |
| Drug use | 0.69 (0.48, 0.99) | 0.045 | 0.71 (0.49, 1.04) | 0.077 |

^Multivariate analyses take into account clustering by facility and adjust for age, race/ethnicity, marital status, parity, employment, insurance, and receipt of public assistance programs

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## Table 3

**Mixed effects logistic regression model predicting the odds of having a usual source of care among women who report an alcohol problem symptom, binge drinking, or drug use pre-pregnancy recognition, N=300**

| | Odds Ratio (OR) | 95% Confidence Interval (CI) | P>\|z\| |
|---|---|---|---|
| Age | 1.03 | (0.97, 1.09) | 0.307 |
| Race/ethnicity | | | |
| White (reference) | | | |
| Black | 0.91 | (0.43, 1.91) | 0.808 |
| Hispanic/Latina | 1.08 | (0.57, 2.06) | 0.794 |
| Other | 0.90 | (0.43, 1.89) | 0.781 |
| Marital status | | | |
| Single (reference) | | | |
| Married | 0.76 | (0.32, 1.85) | 0.553 |
| Separated/widowed | 1.30 | (0.59, 2.90) | 0.515 |
| Has at least one child (vs. nulliparous) | 1.55 | (0.85, 2.85) | 0.151 |
| Employed full or part time (vs. unemployed, home-maker, or looking for work) | 1.05 | (0.63, 1.74) | 0.860 |
| Insured (vs. uninsured) | 2.55 | (1.50, 4.33) | 0.001 |
| Receives public assistance* (vs. no public assistance reported) | 0.69 | (0.38, 1.26) | 0.226 |

Model adjusts for clustering by facility;

*included receipt of Temporary Assistance for Needy Families (TANF) , Women, Infants, and Children Supplemental Nutrition Program (WIC) , Food stamps, or Supplemental security income/disability.