AVOIDING HEALTHCARE AFTER DOING TIME: PRISON/JAIL EXPOSURE AND MEDICAL AVOIDANCE

by

NATALIA PIRES DE VASCONCELOS

(Under the Direction of Major Professors: Ron Simons, and Sarah Shannon)

ABSTRACT

Extensive research stresses the detrimental health effects of exposure to the criminal legal system (CLS). One emerging topic is the connection between CLS exposure and medical avoidance. In this study, I look at data from the Family and Community Health Study (FACHS) in two sets of regression models that test whether prison/jail exposure is correlated with medical avoidance among a younger sample (539 respondents, average age 28) and older sample (497 respondents, average age 56). The results show that medical avoidance was significantly correlated with CLS exposure in both samples, even when controlling for bad experiences with medical care among the younger sample. This demonstrates how CLS exposure affects contact with medical care regardless of past experiences with health services, even as people age and likely need more healthcare. These findings reinforce the need for stronger re-entry and healthcare continuity policies grounded in protecting the privacy of formerly incarcerated people.

INDEX WORDS: CLS Exposure, Medical Avoidance, Prisons, Health, Healthcare

AVOIDING HEALTHCARE AFTER DOING TIME: PRISON/JAIL EXPOSURE AND MEDICAL AVOIDANCE

by

NATALIA PIRES DE VASCONCELOS

BA in Law, University of Sao Paulo, Brazil, 2010

BA in Social Sciences, University of Sao Paulo, Brazil, 2018

Ph.D. in Law, University of Sao Paulo, Brazil, 2018

LLM, Yale Law School, 2019

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2024

AVOIDING HEALTHCARE AFTER DOING TIME: PRISON/JAIL EXPOSURE AND MEDICAL AVOIDANCE

by

NATALIA PIRES DE VASCONCELOS

Major Professors:	Ron Simons
	Sarah Shannon
Committee:	Man Kit (Karlo) Lei

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
December 2024

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

CHAPTER 1

INTRODUCTION

Exposure to the criminal legal system is a massive social and demographic phenomenon that impacts the lives and wellbeing of millions of individuals and families in the United States every year. Between 1948 and 2010, 3% of the total U.S. adult population and 15% of the African American adult population had been in prison, and at least 8% of all adults and 33% of African American adults had been convicted of felonies in the span of nearly 60 years (Shannon et al. 2017). By the end of 2021, the country had around 5.4 million people under the supervision of the correctional system (either incarcerated in prison or jail or monitored on probation or parole), a rate of 1 person for every 48 adults in the United States or 2% of the country's residents (Carson and Kluckow 2023).

Extensive research has stressed the detrimental health effects associated with individual and community exposure to the criminal legal system, making incarceration a social determinant of health[1] that disproportionately burdens racial and ethnic minorities, especially the Black population (Berg et al. 2021; Fazel and Baillargeon 2011; Massoglia 2008a, 2008b; Massoglia and Pridemore 2015; Schnittker, Massoglia, and Uggen 2022; Wildeman and Wang 2017).

One less studied connection between exposure to the criminal legal system and health is system avoidance. Being formerly incarcerated in the United States subjects people to long and pervasive forms of post-detention control and "symbolic branding" (Wacquant 2001). The concept of "carceral citizenship" (Miller and Alexander 2016), wherein there is a systemic expectation that the formerly incarcerated will engage in

illegal activities, is internalized by individuals and communities in the form of social isolation, fear, cynicism, and distrust toward state policies and formal organizations (Berg et al. 2016; Brayne 2014; Haskins and Jacobsen 2017). System avoidance behavior is also likely to affect one's predisposition to access healthcare services, making even low-level contact with criminal legal system institutions (such as through police stops) a factor associated with a higher likelihood of medical avoidance (Carbonaro 2022).

In the current study, I provide additional evidence that exposure to the criminal legal system leads to medical avoidance. Using data from the Family and Community Health Study (FACHS), a longitudinal project that includes social and health information of Black American families residing in Georgia and Iowa, I confirm and enhance previous research findings by examining the relationship between medical avoidance and exposure to prison and jail, while controlling for previous negative experiences with medical services. Moreover, while previous works have focused on medical-avoidance behavior of young adults, I also test this relationship in an older sample and find similar results.

These findings indicate that exposure to the criminal legal system leads to medical avoidance even as people age and are more likely to require healthcare. The present study, combined with the growing body of evidence on medical-avoidance behavior, reinforces the need for targeted public policies that aim to expand and strengthen healthcare continuity post-release.

CHAPTER 2

LITERATURE REVIEW

Access to healthcare before and after incarceration exposure

The complex causal connections between exposure to the criminal legal system, morbidity, and mortality are influenced by factors ranging from an individual's previous health conditions, age, race and ethnicity, to gender, lifestyle, and socioeconomic status, as well as conditions of confinement and the extent of social and institutional support after release (Houle 2014; Massoglia 2008a; McNeeley, Clark, and Duwe 2023; Patterson 2010; Schnittker et al. 2022).

In general, people entering prisons and jails often exhibit worse physical and mental health compared to those who have never been exposed to the criminal legal system (Schnittker et al. 2022). While incarcerated, they frequently face a higher concentration of many health risk factors, including overcrowding, food insecurity, poor ventilation, violence, and isolation. These conditions can increase the likelihood of developing or worsening health conditions, ranging from infectious diseases (like COVID-19, HIV, Hepatitis B and C, and Tuberculosis) to chronic conditions and psychiatric disorders (Barnert, Ahalt, and Williams 2020; Fazel and Baillargeon 2011; Kajeepeta et al. 2021; Schnittker et al. 2022). Berg et al. (2021) even find that effects associated with one's incarceration exposure can become biologically embedded, making exposure to prison and jail also correlated with accelerated aging.

Since the 1976 Supreme Court's decision in Estelle v. Gamble, incarcerated people have been granted a constitutional right to "reasonably adequate" medical treatment that has progressively expanded over the years (Anno 2001; Rold 2008).

Rooted in the Court's interpretation of the Eight Amendment's prohibition of cruel and unusual punishment, this right grants significant deference to correctional administrations, protecting incarcerated people only against extreme levels of abuse and neglect while providing unclear and inconsistent guidelines for what correctional healthcare should look like (Littman 2022; Schlanger 2018).

This fact translates into great variation in policy design and practice of correctional healthcare among states (Huh et al. 2017; Maruschak et al. 2016; Schnittker et al. 2022; Wilper et al. 2009). A 2017 Pew Charitable Trust study (Huh et al. 2017) revealed substantial divergence among states in how they manage and organize their correctional healthcare systems. They differ on how they delivery care, varying from fully private to hybrid and fully public provision; on how much they spend annually on correctional healthcare, ranging from $2,173 per inmate in Louisiana in 2015, to $19,796 per inmate in California; and on what health conditions are more commonly surveilled and treated. For example, HIV/Aids is tracked in 46 of 47 states that provided data, while cognitive impairment and dementia are monitored in only 19 and 18 states respectively.

Upon release, formerly incarcerated people might need more healthcare than those who were never incarcerated. They might have acquired new health conditions associated with their prison exposure, which will need treatment after release; they might have discovered previous health conditions unknown before incarceration; or they might be encouraged or even required to seek medical care, such as substance-abuse programs, as part of their reintegration, probation, or parole packages (Schnittker et al. 2015). Finding jobs, housing, and reconnecting with friends and family while facing stigma and discrimination (Harding and Harris 2020; Schnittker and John 2007; Schnittker et al. 2022) can also give rise to new health conditions. These experiences

elevate stress and isolation, which might trigger acute stress responses and increase the risk of stress-related illnesses and infections (Massoglia 2008a; Massoglia and Pridemore 2015).

Access to healthcare services after release, however, is often challenging. Coverage during incarceration in most states is interrupted as correctional facilities take charge of healthcare provision (Schnittker et al. 2022). In fact, the Medicaid Inmate Exclusion policy determines that Medicaid coverage be terminated or suspended during incarceration. Once released, much of the care obtained from prison and jail health services is discontinued. Few programs offer services beyond one year after release (Freudenberg and Heller 2016), and people need to find ways to regain access to healthcare providers.

The Affordable Care Act Medicaid Expansion and policies, such as the Second Chance Act and the Substance Use Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act, have been shown to contribute to better rates of enrollment (Albertson et al. 2020; Barnert et al. 2022; Burns et al. 2021, 2022; Haimson et al. 2023; Testa and Porter 2023; Wakeman, McKinney, and Rich 2009). Despite these efforts, a recent nationally representative study has shown that previously incarcerated people are still less likely to obtain health insurance than those with no history of incarceration. They are also more likely to experience one-year-long uninsurance and to maintain a less stable health-insurance coverage (Zhao et al. 2023).

Health-insurance enrollment is just one of the many hurdles formerly incarcerated people face as they attempt to obtain care or continue any treatment started during their time in prison. Access to one's medical records, a care plan, referrals, and doctors' appointments are just some of the operational problems encountered when re-entering free-world healthcare services. Moreover, healthcare access is highly

contingent on many essential resources that exposure to prison affects and might cut short. Ensuring adequate and stable levels of income, decent housing at a viable distance from health services, and family and community support are just a few of the factors that might affect healthcare utilization (Cloud et al. 2023; Freudenberg and Heller 2016; Mallik-Kane and Visher 2008; Schnittker et al. 2022). Faced with these challenges, healthcare-seeking behavior changes, as continuously using primary care is often replaced by costly visits to emergency rooms and hospital facilities when health conditions worsen (Huh et al. 2017; Mallik-Kane 2005; Mallik-Kane and Visher 2008; Schnittker et al. 2015; Wang et al. 2012).

System avoidance and medical-avoidance behavior

An additional effect of exposure to the criminal legal system is system-avoidance behavior. Brayne (2014) defines "system avoidance" as a specific type of behavior from those who have been exposed to prison or jail institutions: the likelihood of avoiding interactions with "surveilling institutions," defined as organizations that keep detailed formal records of whom they engage with, such as banks and educational institutions but also hospitals and healthcare services (Brayne 2014). With data from the National Longitudinal Study of Adolescent Health (Add Health) Brayne found that respondents who had interacted with the criminal legal system in different forms — being stopped by police, arrested, convicted, or incarcerated — were less likely to interact with surveilling institutions than respondents with no previous contact.

Further studies replicated and strengthened these findings. Remster & Kramer (2018) show that system avoidance is not specific to non-white people, Haskins & Jacobsen (2017) find evidence of system avoidance behavior in parental schooling involvement in cases of paternal incarceration, and Patler & Gonzalez, (2021) discuss

how system avoidance is also explained by the compounded vulnerability of exposure to the criminal legal system and being part of mixed-immigrant status families.

The specific effects of exposure to the criminal legal system and healthcare-seeking behavior are specifically discussed by Carbonaro (2022), looking at medical-avoidance behavior and social isolation in the case of frequent police stops. The study also tests this specific dimension of system avoidance using Add Health data and finds that police stops are not only associated with more medical avoidance, but medical avoidance and social isolation functioned as mediators between police stops and worse self-reported health.

The mechanisms behind this avoidance are indicated in ethnographical work. Goffman's research on Philadelphia's poor and Black neighborhoods argues that police officers admitted to routinely running names in hospital admissions records, which in turn leads many young men to avoid contact (Goffman 2009). Lara-Millán (2014, 2021) finds additional evidence for this form of social control in a public hospital in Los Angeles, discussing how the city decided to implement a "hospital police" force that would collect visitors' and patients' information in order to identify "gang" members (Lara-Millán 2021:145).

Fear of surveillance from exposure to the criminal legal system, however, might not be the sole factor explaining medical-avoidance behavior among people who were previously incarcerated. Exposure to the criminal legal system is highly concentrated among racial and ethnic minorities, largely affecting the Hispanic and Black populations (Miller 2014; Shannon et al. 2017). These groups, however, are also more likely to distrust medical professionals and avoid medical utilization due to race-based discrimination and previous bad experiences with healthcare services (Armstrong et al. 2013; Lee, Ayers, and Kronenfeld 2009; Mays, Cochran, and Barnes 2007; Morgan et

al. 2022; Sewell 2015; Willis et al. 2023). Behavior derived from previous bad experiences might explain medical-avoidance behavior and show up as a confounding factor to the relationship between exposure to the criminal legal system and medical avoidance. Formerly incarcerated people from racial minorities are likely to avoid seeking medical care because of these two different factors combined — because they have had previous bad experiences with medical services, especially due to race-based discrimination (Armstrong et al. 2013; Lee et al. 2009), and because of expected surveillance and discrimination based on their exposure to the criminal legal system or "carceral citizenship" (Miller 2014; Miller and Alexander 2016). Previous research does not control for this past with healthcare services as a confounding factor, using race and ethnicity as proxies for these other potential explanations of system avoidance and medical behavior.

Another potential explanation for the significant correlation between medical-avoidance behavior and exposure to the criminal legal system might be the age of individuals surveyed in most studies. Specifically, both Brayne (2014) and Carbonaro (2022) rely on a relatively young sample, engaging with waves 3 and 4 of Add Health data, when respondents were between 18 and 34 (on average, 22 years old for wave 3 and 29 years old for wave 4). It is expected that younger people will seek fewer medical care services when compared to older adults. In fact, between 2000 and 2018, the average number of visits to physician offices for every 100 people was between 1.48 to 3.3 times higher for individuals 45 years or older when compared to people between 18 and 44, and between 1.6 and 2.07 higher when looking specifically at the same age-groups only among African Americans (National Center for Health Statistics 2021).

CHAPTER 3

METHODS

The present study

In this study, I account for these two different confounders — (1) previous bad experiences with healthcare services and (2) age. I then test whether people with previous jail or prison experience are still less likely to interact with healthcare services seeking check-ups and physical exams.

Data

I examine data from the FACHS project, an assessment conducted since 1997 involving 889 Black American families. The families were recruited randomly, had at least one fifth grader, and resided in different types of neighborhoods in Georgia (n = 422) and Iowa (n = 467), representing a range of different socioeconomic strata. The project has conducted interviews with both children and adult caregivers since 1997.

The current study engages with data collected from the *young-adult sample* re-interviewed between 2015 and 2016 and the *middle-aged sample*, comprising their primary caregivers in 1997, re-interviewed between 2018 and 2019. All study protocols and procedures were approved by the Institutional Review Board at [name deleted to maintain the integrity of the review process]. For additional information on the overall project and recruitment, see Gibbons et al. (2004) and Simons et al. (2021).

The *young-adult sample* comprises 541 respondents who provided information on both prison/jail exposure and medical-avoidance behavior. After excluding observations from two respondents who failed to answer questions on their health insurance, the final sample consists of 539 respondents with an average age of 28.7 years (ranging between

27 and 31 years old). Among these, 207 reported their biological sex as male (38.4%) and 332 as female (61.6%), with an average annual personal income of $21,600 (standard deviation of $16,638, ranging from $0 to $83,136).

The *middle-aged sample* comprises 498 respondents. After excluding observations from 4 respondents who failed to provide information on their education, prison/jail exposure, and health-insurance status, the final sample comprises of 494 respondents, with the majority reporting their biological sex as female (94.33%). The average age is 56 years old, ranging from 26 to 87 (standard deviation of 6.85). Personal and family income reported on an 18-point scale ranging from "None" to "$200,000 or more" shows a median personal income between $25,000 and $30,000 (with the 25th percentile reporting between $10,000 and $ 15,000, and the 75th percentile between $40,000 and $45,000).

Measurements

Main Variables

The dependent variable, **medical avoidance**, is measured for the young-adult sample using a scale that combines responses to two different questions. Respondents were asked whether they agreed with the sentence "I try to go to the doctor regularly for check-ups and physical exams"[2] and with the sentence "I try to take good care of my health." Their response options included "Strongly agree," "Agree," "Neutral or mixed," "Disagree," and "Strongly disagree." The two measures were highly correlated ($r = 0.506$, $p = 0.000$), suggesting they were related to the same latent construct. After principal component analysis confirming that they were different dimensions of the same item (one-factor eigenvalue of 1.506 and factor loadings of 0.867), I combined these two measures into one scale based on the row mean of both measurements. Medical avoidance for the young-adult sample ranges from 0 (when both questions were answered "Strongly

agree", indicating that respondents had low levels of medical avoidance) to 4 (when both questions were answered "Strongly disagree," indicating that respondents had high levels of medical avoidance).

For the middle-aged sample, the use of medical services was asked differently, through the question, "How often do you have check-ups with a doctor?". Respondents could choose one of four alternatives: "Never," "Only occasionally," "Frequently," and "Regularly." This variable was measured as an ordinal categorical variable with values that range from 0 (low medical avoidance or regular use of healthcare services) to 3 (high medical avoidance or no use of healthcare services).

The main independent variable, **prison or jail exposure**, was coded as a binary variable indicating whether the respondent reported having been sent to jail or prison, regardless of duration or the reasons for exposure. For young-adult respondents, I obtained information on their prison or jail exposure since the age of 18 from previous FACHS waves up to 2015–2016. If respondents reported being in jail or prison at least once, the variable prison or jail exposure was coded 1; it was coded 0 for whenever respondents explicitly reported not having ever been incarcerated. In this sample, respondents were not given the option to refuse answering the question, treating missing values as a refusal and excluding them from the analysis.

The FACHS project first asked middle-aged adults questions on prison or jail exposure between 2018 and 2019. The variable inquires how many times respondents had been in jail or prison, their offenses, and how much time they spent incarcerated. Respondents were given the option to refuse to answer the question, which was coded as missing information. I coded 1 for all the answers that indicated the respondent had spent time in jail or prison, and 0 for every instance where the respondent said they had never been incarcerated or did not answer the question without explicitly refusing to answer.

Controls

I also controlled for **negative experiences with healthcare services** for the young-adult sample. This concept was measured through a one-factor scale built from two measurements — whether respondents had faced poor treatment from health professionals and whether they had avoided going to see a doctor because they thought they would be treated poorly. Missing values for 2015–2016 were imputed by repeating the respondent's answers given in previous waves of the FACHS project. Similar to medical avoidance, this scale was also constructed through principal component analysis, following the identification of a significant correlation between two measures ($r = 0.156$, $p = 0.000$) with a one-factor loading higher than 0.5.[3] I combined this pair of measures into a standardized scale based on their row mean. These questions were not asked to middle-aged respondents.

A person's prior diagnosis of different **health conditions**, especially chronic illnesses, can also impact medical-avoidance behavior. Thus, for the young-adult sample, I control for diagnosed illness through a scale built from the sum of all the conditions that respondents marked as having ever been diagnosed with or as currently taking medication for, drawn from a list of 10 conditions (heart disease, peptic ulcer, high blood pressure, thyroid disease, liver disease, diabetes, kidney problems, depression, anxiety, and cancer). A similar scale was built for the middle-aged sample, but this group was inquired on a 20-item list of health conditions.[4]

For the middle age sample, given their age, I also added an additional health-related control, considering their more recent **general health** status. This variable was determined through a scale based on the row mean of their answers to the questions "In general, would you say your health is…" and "Compared to one year ago, how would you rate your physical health in general now?"[5]

I coded 1 for when young-adult respondents had **health insurance** for themselves and their family or were covered by Obamacare, and 0 for when none of those forms of insurance was present. Middle-aged respondents were asked if anyone in the family was covered by a health-insurance plan, without specifying whether it was themselves or other members. I coded 1 for when they reported "Yes" and 0 for "No."

To assess **healthcare affordability**, I created a scale determined by the average score on the young-adult sample's level of agreement with the sentence "I have avoided going to see a doctor because I thought I couldn't afford it"[6] and on the young-adult and middle-aged respondents' agreement with the sentence "We have enough money to afford the kind of medical care we need." Respondents could "Strongly disagree," "Disagree," "Agree," or "Strongly agree" with the statements or have a "Neutral or mixed" position.[7]

The young adults **marital/cohabitation status** was determined based on their answer to the question "What best describes your current relationship status?" at the time of the interview. I coded "Yes (1)" for married or cohabitating when respondents answered they lived with romantic partners (whether within a formal marriage or cohabitating) and "No (0)" for all the other responses.[8] For the middle-aged sample, the question inquires whether they have ever been married, and I coded "0" for "no" and "1" for "yes."

Biological sex was coded as "0" for whether respondents reported their biological sex as male and "1" for females. I also controlled for the **highest level of education**, coded as 1 for lower than high school education, 2 for high school education, and 3 for college education, technical or vocational training, or graduate-level education.

For respondents from both the young-adult and middle-aged samples, I measured whether respondents engaged in **healthy eating** habits, a score between 0 to 5 for young adults and 0 to 4 for middle-aged adults determined by the average of their scores based

on their answers to questions "During the past 7 days, on how many days did you eat a whole piece of fruit (for example, an apple, orange or banana) or drink a glass of 100% fruit juice, not counting punch, Kool-Aid, or sports drinks?" and "During the past 7 days, on how many days did you eat vegetables like broccoli, string beans, tomatoes, spinach, or collard greens?."[9]

Data analysis

I conducted two analyses using Stata 17 — a set ordinary least square regressions for the young-adult sample, and a set of ordinal logistic regressions for the middle-aged sample. For the young-adult sample, the dependent variable was calculated by the row average score of its two component measurements, which makes ordinary least square regressions[10] adequate. I found little to no multicollinearity by running a variation inflation factor test (VIF), resulting in a mean VIF score for all variables of 1.12, with no individual VIF score exceeding 5 (Allison 1999:141; Mehmet and Jakobsen 2022:159). Heteroscedasticity was not detected as a problem after performing a Breusch–Pagan test ($\chi^2 = 2.070, p = 0.150$). [11] Following a Shapiro-Wilk W normality test ($z = 8.444, p = 0.000$), I addressed problems of residuals not normally distributed by incorporating robust standard errors to the models.

For the middle-aged sample, I estimated parameters through an ordinal logistic regression after a Brat test confirmed the non-violation of the parallel regression assumption ($\chi^2 = 28.94,\ p = 0.089, df = 20$). To address homoscedasticity, I used robust standard errors in all models.[12]

CHAPTER 4

RESULTS

Descriptive statistics

Tables 1 and 2 indicate the general descriptive statistics for the main variables and controls for the two samples. As noticed in the previous section, 94.3% of respondents from the Middle-Aged adult sample and 61.5% from the Young-Adult sample identified themselves as female. Young adult respondents were also predominantly unmarried (94.43%), while close to 80% of the Middle-Aged Sample respondents indicated being married or cohabitating.

Among the Young-Adult Sample, 57.33% of respondents marked having a college education, technical or vocational training, or graduate-level education as their highest level of education, while 42.67% of respondents had either high school (34.14%) or lower than high school education (8.53%). A similar pattern is found among respondents for the older sample's highest level of education: most of them (45.95%) indicated having a college education, technical or vocational training, or graduate-level education, 40.08% answered higher school education, and 13.97% lower than high school education. In both samples, I also found that most respondents answered that they had some form of health insurance (87.9% for the Young-Adult Sample and 91% for the Middle-Aged Sample).

Most respondents among the Young-Adult Sample reported having no diagnosed health condition (65.49%). They also registered an average score of 2.3 out of 5 in healthy eating, with only 20% of the sample registering an average of 1 point or less. Among the Middle-Aged Sample, only 10.12% of respondents indicated no

diagnosed health conditions, while 66.6% indicated between 1 to 4 health conditions, and 23.28% more than 4 health conditions. For healthy eating scores, 23.28% of middle-aged adults indicated scores of 1 or lower out of 4 points, while most respondents scored 2 points or higher (65.59%).

More than half (58.9%) of the Young-Adult Sample had some form of prison/jail exposure, while exposure was less frequent among the Middle-Aged Sample (25.5%). The Young-Adult Sample also indicates higher medical avoidance levels – 0.976 points on average on a scale from 0 to 4 (or 0.732 on a scale from 0 to 3), while the Middle-Aged Sample indicated 0.615 points, on average, on a scale from 0 to 3. After performing a two-sample mean-comparison t-test,[13] I found that the difference between these two means is positive and statistically significant at a 95% confidence interval (t (1031) = 2.456, $p\ (diff > 0) = 0.007$). On average, on a scale of 0 to 3, the medical avoidance score for the Young-Adult Sample is 0.117 scale points higher than among Middle-Aged respondents.

Table 1: Descriptive statistics for the Young-Adult Sample

Variable	*Mean*	*Std. dev.*	*Min*	*Max*
Age	28.788	0.859	27	31
Biological Sex	0.615	0.486	0	1
Marital Status/Cohabitation	0.055	0.229	0	1
Education	2.487	0.649	1	3
Medical Avoidance	0.976	0.909	0	4
Prison/jail exposure	0.589	0.492	0	1
Health Affordability	2.431	0.809	0	4
Health Insurance	0.879	0.325	0	1
Negative Experience	0.601	0.592	0	3
Healthy Eating	2.329	1.226	0	5
Diagnosed Health Conditions	0.534	0.904	0	5

Table 2: Descriptive statistics for the Middle-Aged Sample

Variable	*Mean*	*Std. dev.*	*Min*	*Max*
Age	56.86	6.85	26	87
Biological Sex	0.943	0.231	0	1
Marital Status/Cohabitation	0.793	0.405	0	1
Education	2.319	0.705	1	3
Medical Avoidance	0.615	0.846	0	3
Prison/jail exposure	0.255	0.436	0	1
Health Affordability	1.817	0.774	0	3
Health Insurance	0.910	0.285	0	1
Healthy Eating	2.191	1.015	0	4
Diagnosed Health Conditions	3.192	2.425	0	15
General Health	2.121	0.673	0	4

A similar test was performed for all the other scale variables common to both samples, where I found that young adults registered slightly higher levels of education, on average (*diff* = 0.168 scale points, t (1031) = 3.989, p (*diff* > 0) = 0.000), and on average perceived themselves as more capable of affording healthcare then respondents from the Middle-Aged Sample (*diff* = 0.27 scale points, t (1031) = 5.983, p (*diff* > 0) = 0.000).

Respondents from the Middle-Aged Sample registered, on average, higher scores for healthy eating than young adults (*diff* = 0.328 scale points, t (1031) = 5.053, p (*diff* > 0) = 0.000). However, they also scored higher than young adults, on average, for the number of diagnosed health conditions. Looking only at health conditions commonly measured for both samples (heart disease, peptic ulcer, high blood pressure, thyroid disorder, liver disease, diabetes, kidney failure, and cancer), respondents' answers could only range between 0 and 8 health conditions. Young adult respondents registered an average number of diagnosed conditions of 0.228 (*sd* = 0.49), ranging between 0 and 3 conditions, while Middle-Aged respondents indicated an average of

1.475 health conditions (*sd* = 1.182), ranging from 0 to 7 (*diff* = 1.247 scale points, *t* (1031) = 22.426, *p* (*diff* > 0) = 0.000).

Correlations

Tables 3 and 4 indicate correlation matrices between main variables and controls. As expected, medical avoidance and prison/jail exposure are statistically and positively correlated in both samples (r =0.139, p *<0.01* for the Young-Adult Sample; r = 0.129, p *<0.001* for the Middle-Aged Sample). Also, in both samples, medical avoidance is statistically correlated, but this time negatively, with health insurance (r = -0.172, p *<0.001* for the Young-Adult sample; r = -0.184, p *<0.001* for the Middle-Aged Sample) and health affordability (r = -0.138, p *<0.01* for the Young-Adult Sample; r = -0.144, p *<0.001* for the Middle-Aged Sample), signaling that having financial conditions to access healthcare might potentially facilitate access and, hence, work as an opposing force to medical avoidance.

Looking closely at the Young-Adult Sample, I found that medical avoidance and prison/jail exposure are negatively correlated with identifying as a female (r = -0.215, p *<0.05; r* = -0.286, p < 0.001). Having had negative experiences with healthcare services, on the other hand, is positively correlated with prison/jail exposure (r =0.127, p < 0.01), medical avoidance (r =0.110, p *<0.05*), and having a higher number of diagnosed health conditions (r = 0.208, p < 0.001), while negatively correlated with having health insurance (r = -0.372, p < 0.001).

Higher levels of education are significantly and negatively correlated with prison/jail exposure (r = -0.210, p < 0.001), indicating college education and equivalent degrees could potentially make contact with the criminal legal system less likely than lower levels of education. Finally, age is shown to be significantly and positively

correlated with prison/jail exposure ($r = 0.124$, $p < 0.001$) but not statistically correlated with medical avoidance.

Among respondents of the Middle-Aged Sample, medical avoidance is negatively correlated with age ($r = -0.123$, $p < 0.001$), education ($r = -0.147$, $p < 0.001$), healthy eating ($r = -0.082$, $p < 0.05$) and the number of health conditions diagnosed ($r = -0.104$, $p < 0.01$). Intuitively, age and the number of diagnosed health conditions are positively and statistically correlated with each other ($r = 0.272$, $p < 0.001$). Similarly, general health, healthy eating, and health conditions are all three also significantly correlated — higher scores in healthy eating are correlated with a lower number of health conditions ($r = - 0.105$, $p < 0.01$), and higher scores in general health ($r = 0.1343$, $p < 0.001$), while general health and health conditions are negatively correlated with each other ($r = - 0.335$, $p < 0.001$).

Considering that the Middle-Aged sample is made predominantly of respondents who have identified as females, prison/jail exposure is not shown to be statistically correlated with biological sex. Prison/jail exposure is, however, positively and statistically correlated with marital status ($r = 0.092$, $p < 0.05$) and negatively correlated with education ($r = -0.134$, $p < 0.001$).

Table 3: Correlation matrix for variables – Young Adult Sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Medical Avoidance	1.000										
(2) Prison/jail exposure	0.139**	1.000									
(3) Age	0.040	0.124**	1.000								
(4) Marital Status	0.060	-0.061	0.069	1.000							
(5) Biological Sex	-0.215***	-0.286***	0.014	0.042	1.000						
(6) Education	0.005	-0.210***	-0.091*	0.054	0.112**	1.000					
(7) Health Insurance	-0.172***	-0.075	-0.037	-0.014	0.037	0.124**	1.000				
(8) Health Affordability	-0.138**	-0.065	0.008	0.065	0.118**	0.191**	0.145***	1.000			
(9) Negative Exp.	0.110*	0.127**	0.133**	-0.041	0.012	-0.003	-0.372***	0.015	1.000		
(11) Healthy Eating	-0.055	-0.022	-0.010	0.083	0.142***	0.157***	0.049	0.100*	0.021	1.000	
(11) Health Conditions	0.008	0.025	0.036	0.018	0.108*	0.046	-0.110*	0.074	0.208***	0.015	1.000

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

Table 4: Correlation matrix for variables – Middle-Aged Sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Medical Avoidance	1.000										
(2) Prison/jail exposure	0.129***	1.000									
(3) Age	-0.123***	-0.131***	1.000								
(4) Biological Sex	0.013	-0.017	-0.027	1.000							
(5) Marital Status	-0.019	0.092*	0.183***	-0.060	1.000						
(6) Education	-0.147***	-0.134***	0.089**	-0.063	0.146***	1.000					
(7) Health Insurance	-0.184***	-0.062	0.088*	-0.046	0.157***	0.233***	1.000				
(8) Health Affordability	-0.144***	-0.084*	0.119***	-0.137**	0.113**	0.252***	0.220***	1.000			
(9) Healthy Eating	-0.082*	-0.035	0.048	0.038	0.089**	0.165***	0.098**	0.135**	1.000		
(10) Health Conditions	-0.104**	0.003	0.272***	0.038	0.007	-0.076*	0.075*	-0.088*	-0.105**	1.000	
(11) General Health	-0.019	-0.044	-0.078*	-0.034	-0.012	0.140**	0.019	0.087*	0.134***	-0.335***	1.000

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

Regression analysis

I examined whether prison/jail exposure is positively associated with medical-avoidance behavior. The initial test involves the Young-Adult Sample, shown in Table 5. Model 1 shows estimates while controlling for age, marital status, biological sex, and education. In Model 2, I introduce variables assessing the individual's ability to afford healthcare, including the health affordability variable and health insurance. Model 3 looks at negative experiences with healthcare services, which might affect an individual's willingness to access healthcare regularly and adds controls for healthy habits, diagnosed diseases, or experience of any health-related symptoms over the last 3 months.

Table 5: Ordinary least square regressions predicting medical avoidance for the Young Adult Sample

	Model 1	Model2	Model 3
Prison/jail exposure	0.170*	0.156*	0.147*
	(0.076)	(0.074)	(0.074)
Age	0.032	0.031	0.024
	(0.043)	(0.042)	(0.043)
Biological Sex	-0.368***	-0.346***	-0.343***
	(0.081)	(0.080)	(0.080)
Marital Status	0.273	0.281	0.302
	(0.208)	(0.205)	(0.205)
Education	0.063	0.114	0.115
	(0.061)	(0.060)	(0.060)
Health Affordability		-0.169**	-0.144*
		(0.054)	(0.057)
Health Insurance		-0.305*	-0.311*
		(0.133)	(0.134)
Negative Experiences			0.087
			(0.079)
Healthy Eating			-0.022
			(0.030)
Health Conditions			0.003
			(0.038)
Constant	-0.009	0.560	0.713
	(1.294)	(1.255)	(1.268)
R^2	0.060	0.099	0.102

Note: Robust standard errors applied. Standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Across the three models, I find that prison and jail exposure is significantly correlated with more medical-avoidance behavior. Moving from never having being incarcerated (no prison/jail exposure) to having had some incarceration experience increases medical avoidance in 0.147 points on average, a result that holds after I control for the respondent's capacity to afford healthcare services, habits, chronic health conditions, and previous bad experiences with healthcare services (for Model 3, β = 0.147, 95% CI [0.001, 0.294], $p = 0.047$).

I also find that people who identified as biological women were less likely to avoid medical care healthcare than those who identified as biological men. When

compared to biological men, medical avoidance is 0.343 points lower on average among biological women, a pattern that is also consistent across all three models (for Model 3, $\beta = 0.343$, 95% CI [-0.502, -0.184], $p = 0.000$).[14]

As expected, being able to afford healthcare and having health insurance are also factors negatively correlated with medical avoidance, and both variables have independent effects over medical avoidance despite being statistically correlated ($r = 0.145$, $p < 0.001$). In fact, the effect of health insurance on medical avoidance is similar to that of biological sex: having insurance was found to be associated with a decrease in medical avoidance in 0.311 points (for Model 3, $\beta = 0.311$, 95% CI [-0.5744101, -0.0477164], $p = 0.021$).

As we have seen, negative previous experiences with healthcare were found to be significantly and positively correlated with medical avoidance before controlling for all the other predictors. When this correlation is controlled solely by prison/jail exposure, its effect is rendered nonsignificant. Adding all the other confounders maintains the result (for Model 3, $\beta = 0.087$, 95% CI [-0.0692997 0.2439017], $p = 0.274$). Considering that prison/jail exposure and negative past experiences with healthcare services were also significantly correlated, this result means that the effect of past negative experiences on medical avoidance is almost entirely explained by previous incarceration.

It would be reasonable to expect that more education would also be negatively associated with medical avoidance. In all three models above, however, education did not significantly affect medical avoidance at the $p < 0.05$ level, while being positively correlated with it at the $p < 0.1$ level for Models 2 ($\beta = 0.114$, 95% CI [-0.004 0.234], $p = 0.059$) and 3 ($\beta = 0.115$, 95% CI [-0.002 0.233], $p = 0.055$). I discuss a possible interpretation of this finding in the discussion section.

Neither age (for Model 3, β = 0.024, 95% CI [-0.060 0.110], p = 0.56) nor marital status (for Model 3, β = 0.30, 95% CI [-0.101 0.706], p = 0.141) showed statistical significance in predicting medical avoidance in all three models.

The effects of diagnosed health conditions and healthy eating in predicting medical avoidance were statistically nonsignificant (for Model 3, β = - 0.022, 95% CI [-0.082 0.037], p = 0.463, and β = 0.003, 95% CI [-1.77 3.204], p = 0.937, respectively). The direction of their coefficients, however, indicated an intuitive with medical avoidance: healthy eating, as a form of healthy habit, was negatively associated with medical avoidance, while a higher number of health conditions was positively associated with medical avoidance.

The second test involves the Middle-Aged Sample (Table 6). Similar to the younger sample, I also find that prison or jail exposure significantly and positively predicts medical avoidance across all three models (for Model 3, β = 0.419, 95% CI [0.030, 0.808], odds ratio = 1.521, p = 0.035).

Differently from the younger group, however, the distribution of biological sex among this sample is highly unbalanced, as only 28 respondents reported identifying as biologically male. This fact is likely explaining why biological sex does not significantly predict medical avoidance (for Model 3, β = -0.181, 95% CI [-0.920 0.557], odds ratio = 0.834, p = 0.631). This result might also reflect a change in health-seeking behavior among older women, an alternative explanation that is reinforced by the change in direction for the Pearson correlation measure found between biological sex and medical avoidance from the younger sample (negative) to the older sample (positive), as seen in Tables 3 and 4.

Age is shown to significantly affect medical avoidance (for Model 1, β = -0.031, 95% CI [-0.062 -0.001], odds ratio = 0.968, p = 0.023) only in the first model. The

variable loses significance when socioeconomic status and the overall health of respondents are controlled for (for Model 3, β = -0.022, 95% CI [-0.054 0.008], odds ratio = 0.977, p = 0.157). Marital status also does not significantly predict medical avoidance among respondents from the older sample (for Model 3, β = 0.163, 95% CI [-0.306 0.532], odds ratio = 1.177, p = 0.496).

Table 6: Ordinal logistic regression predicting medical avoidance for the Middle-Aged Sample.

	Model 1	Model2	Model3
Prison/jail exposure	1.576*	1.522*	1.521*
	(0.316)	(0.301)	(0.302)
Age	0.968*	0.971	0.977
	(0.015)	(0.015)	(0.015)
Biological Sex	0.923	0.797	0.834
	(0.340)	(0.295)	(0.314)
Marital Status	1.044	1.178	1.177
	(0.245)	(0.280)	(0.282)
Education	0.706*	0.797	0.8170
	(0.098)	(0.112)	(0.118)
Health Insurance		0.399**	0.432**
		(0.120)	(0.130)
Health Affordability		0.810	0.800
		(0.100)	(0.101)
Healthy Eating			0.883
			(0.082)
Health Conditions			0.914*
			(0.040)
General Health			0.858
			(0.122)
/			
cut1	-2.093*	-2.934*	-3.281*
	(0.937)	(0.989)	(1.078)
cut2	-1.152	-1.968*	-2.305*
	(0.929)	(0.978)	(1.061)
cut3	1.646	0.876	0.547
	(1.031)	(1.064)	(1.131)
Pseudo R^2	0.021	0.035	0.041

Note: Robust standard errors applied. Standard errors in parentheses. Coefficients are presented as odds ratio.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Differently from the younger sample, the Pearson correlation measure of education and medical avoidance is statistically significant and negative. Model 1 shows that this relationship is statistically significant at the $p < 0.05$ level when controlled for biological sex, age, and marital status, losing significance in Models 2 and 3 (for Model 3, $\beta = -0.202$, 95% CI [-0.485 0.081], odds ratio = 0.817, $p = 0.162$), especially once health insurance and health affordability are added to the equation.

These two variables are significantly correlated with each other ($r = 0.220$, $p < 0.001$), but when added together to both Models 2 and 3, they render only health insurance a significant predictor of medical avoidance (for Model 3, $\beta = -0.837$, 95% CI [-1.427 -0.246], odds ratio = 0.432, $p = 0.005$).

As shown in the previous section, general health, healthy eating, and health conditions, are significantly correlated with each other. When added together to Model 3, however, I find that only health conditions work as a statistically significant predictor of medical avoidance, after controlling for all other confounders (for Model 3, $\beta = -0.089$, 95% CI [-0.176 -0.023], odds ratio = 0.914, $p = 0.05$), indicating that higher numbers of health conditions are negatively associated with avoiding medical care. Differently from the Young-Adult Sample, respondents from this sample register are more likely to indicate higher numbers of diagnosed illnesses, even if differences in scales are accounted for.

CHAPTER 5

DISCUSSION

The present findings indicate that prison and jail exposure impacts an individual's interaction with healthcare services, even when controlling for biological sex, the ability to afford healthcare, past negative experiences with healthcare provision, and overall health.

As people age, they are more prone to need healthcare services, especially due to a higher likelihood of suffering from chronic conditions that affect their healthcare utilization (Cheng et al., 2020; Institute of Medicine (US) Committee on the Future Health Care Workforce for Older Americans, 2008). The latest National Center for Health Statistics report on health in the United States indicates that, between 2000 and 2018, individuals under 18 and between 18 and 44 years old registered an average number of visits to physician offices per year of 234 and 216 per 100 people. By contrast, those between 45 and 64 years old visited physician offices 361 times per 100 people on average, while those 65 and older visited 650 times per 100 people on average (National Center for Health Statistics, 2021).

The findings presented here suggest that exposure to the criminal legal system affects the way people interact with healthcare services. Among younger and older adults within the two examined samples, exposure to incarceration was statistically and positively correlated with more medical avoidance. Like their younger counterparts, older respondents also exhibited a reduced willingness to engage with healthcare services for regular checkups and preventive care even when manifesting considerably worse health indicators than the younger sample. This finding underscores the lasting

effects of exposure to the criminal legal system, persisting even as health becomes a more salient and critical priority in people's lives as they age.

The analysis also allows for the control of previous bad experiences with healthcare services, a factor commonly linked to discrimination or feelings of distrust among racial and ethnic minorities. The findings suggest that avoiding regular use of medical services is still explained by exposure to the criminal legal system even when controlling for prior negative experiences with healthcare services. This reinforces the distinction between medical avoidance caused by race-based discrimination and other forms of mistreatment, and medical avoidance due to the fear of surveillance and control. This finding is consistent with previous literature identifying race and ethnicity as non-distinctive factors in system avoidance (Brayne 2014; Carbonaro 2022; Remster and Kramer 2018).

Education levels followed a non-expected direction among the younger sample. According to the literature, levels of education should facilitate access to acute and preventive care (R. M. Andersen, 1995; R. Andersen & Newman, 2005; Fiscella et al., 1998; Lynch, 2003) and allow individuals to be less skeptical and more informed consumers of healthcare services and health information, while also more promptly identifying symptoms and the need for medical services and healthier behaviors (Fiscella et al., 1998; Ross & Wu, 1995; Williams & Collins, 1995).

One would expect, therefore, that education should be negatively correlated with medical avoidance. For the younger sample, however, education did to not significantly affect the main variable, and, instead, was positively correlated with medical avoidance at the $p < 0.1$ level for Models 2 and 3. For the older sample, I find a relationship with medical avoidance closer to the one expected based on previous studies. This finding might indicate that younger and more educated respondents will also be more likely to

have more access to health information outside traditional medical services. This is likely to be reinforced by this group's relatively better health, making them less likely to seek healthcare when compared to the older sample.

An additional finding is that of the importance of gender, here measured as biological sex. It is well established that gender matters greatly in healthcare utilization. According to the literature on health-seeking behavior, women report higher utilization of healthcare services than men while also having higher life expectancy but also higher morbidity rates — a "paradox" long discussed by social science research (Nathanson, 1975).

The healthcare-utilization behavior, however, has been shown to change later in life, as women are more likely to suffer functional impairment in mobility and personal self-care, affecting their ability to seek healthcare services (Arber & Cooper, 1999; Bertakis et al., 2000; Roy & Chaudhuri, 2008; Travis et al., 2010). In the United States, according to the National Center for Health Statistics, between 2000 and 2018 men visited physician offices 266 times on average per year, while women visited 348 times. Moreover, younger women register more of these visits than men — while men under 18, between 18 and 44, and between 45 and 54 years old would on average visit physician offices 239, 140, 263 times per year, women of the same age groups would register 230, 293, and 308 visits per year. As women age, the number of visits declines in comparison to men — 570 and 735 visits for men aged between 65 and 74 and men over 75 years old, compared to 618 and 705 for women in the same age groups (National Center for Health Statistics, 2021).

In the first three models examined above, for the younger-adult sample, biological sex appeared as a statistically significant predictor of low medical avoidance. Identifying as a biological woman was negatively correlated medical avoidance, which

could mean that women from this sample, when compared to men, are more likely to seek healthcare, following the expectations set by previous studies discussed above. However, among the older sample, the relationship between biological sex and medical avoidance loses significance. One possible explanation for this finding is that of the predominance of respondents who identified as biological women. However, an alternative explanation, which could be explored by further studies, could be that the findings reflect a change in health-seeking behavior among older women, who tend to seek less medical care as they age, when compared to men.

There are at least three policy implications arising from the main findings of this study and the growing literature on the connections between healthcare access and exposure to the criminal legal system. First, investing in reentry programs should come hand-in-hand with promoting a continuous line of care from prison/jail to the outside world. Access to healthcare should be guaranteed to all people, especially those reentering the free world as they are more prone to suffer from health conditions contracted or aggravated during confinement and as they endure stigma and limited access to resources that can permit healthy behaviors (such as education, employment, housing, or living in better neighborhoods).

Moreover, the sheer interruption of lines of care started in prisons and jails exposes formerly incarcerated people to greater risks of mortality and morbidity from conditions that were addressed and controlled while in custody, such as substance abuse and HIV (Binswanger et al. 2007; Fu et al. 2013; Huh et al. 2017; Morrissey et al. 2007; Spaulding et al. 2011).

Second, investing in continuous access is also a way for governments to ensure that the benefits of treatments started during custody and the public resources invested in these policies are not squandered once people leave state custody. Interruption in

treatments and access to healthcare has been associated with higher rates of recidivism and public health risks (Binswanger et al. 2007; Huh et al. 2017; Spaulding et al. 2011).

Third, these policies should involve more than securing health-insurance enrollment, medication maintenance, linkage between inside and outside providers, and patient outreach and education and medical-record sharing between healthcare personnel (Huh et al., 2017). The present study indicates, however, a strong desire to promote a culture of trust and confidentiality between those formerly incarcerated and healthcare workers. As the previous models have discussed, exposure to the criminal legal system is associated with medical-avoidance behavior regardless of one's previous experiences with healthcare personnel, and despite one's age and more critical need for healthcare attention. This suggests that the fear of surveillance and control is an important mechanism behind medical avoidance — and one that needs to be addressed by re-entry policies if they intend to promote continuous lines of care.

Hospitals, clinics, and treatment centers should be perceived as safe spaces where law enforcement personnel have limited access and little capacity to interfere with or collect information on patients. This point leads to the need for additional restrictions on the types of record and information sharing that happens between personnel in the criminal legal system and medical staff and on the types of information collected by healthcare providers during care.

CHAPTER 6

CONCLUSION

The findings in this paper are statistically limited to the population studied within the FACHS project. This means that future research should replicate the present study in larger and more representative samples. Future studies could also benefit from incorporating additional controls such as the variables that can qualify the different types of prison/jail exposure, such as sentence length, number of jail/prison stays, and the different types of correctional facilities and their security levels, as well as the types of offense and forms of release, such as if individuals remained under state supervision such through probation or parole.

It might also be worth attempting to measure surveillance avoidance directly by trying to capture respondents' feelings toward and trust of the criminal legal system and law enforcement agencies more broadly. Another way of potentially measuring system avoidance would be to determine how much respondents trust different state organizations and how much they value their privacy and personal data.

Finally, evidence in the present paper suggests that an important dimension of the relationship between medical-avoidance behavior and exposure to the criminal legal system might be gender and its potential interaction with other social demographic factors.

Despite these limitations, the analysis presented in this paper reinforces previous studies on system avoidance and aligns with a growing body of literature examining the less overt but clearly pervasive effects of exposure to the criminal legal system. The literature on health and prison/jail exposure has long argued that contact with the criminal

legal system affects one's health and wellbeing through stigma and exposure to health risks. This paper helps combine this body of literature with that of system-avoidance studies, arguing that prison and jail contact is also likely to affect one's health by reducing their predisposition to engage with healthcare services and seek medical care, even if individuals age and experience more pressing health needs, and despite their previous experiences with healthcare services. This paper highlights the need for policies that can effectively disentangle penal institutions from other state services and, more importantly, that can promote re-entry initiatives that not only guarantee healthcare access and treatment continuation but that are grounded in promoting trust between providers and patients while protecting them from surveillance and control by the criminal legal system. This paper provides further evidence that increased state surveillance, when combined with welfare services such as healthcare, is likely to worsen people's health by alienating people from public networks of care while affecting trust in the state and its formal institutions.

NOTES

[1] U.S. Department of Health and Human Services. Healthy People 2030. Social Departments of Health Literature Summaries. Incarceration. Retrieved November 25, 2023, from https://health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/incarceration#cit19

[2] For the middle-aged sample, the question is slightly different — respondents were asked "How often do you have check-ups with a doctor?" and they could choose from "Never," "Only occasionally," "Frequently," or "Regularly." Their responses were ordered from less to more frequent interaction with healthcare services.

[3] For 539 degrees of freedom, the correlation between the two measures was $r = 0.156$, $p = 0.000$. After principal component analysis, their factor loading was 0.760.

[4] These are: Arthritis or rheumatism, Glaucoma, Asthma, Emphysema or chronic bronchitis, High blood pressure, Heart trouble, Circulation trouble in arms or legs, Diabetes, Ulcers of the digestive system, Other stomach or intestinal disorders or gall bladder problems, Liver disease, Kidney disease, Other urinary tract disorders (including prostate trouble), Cancer or Leukemia, Anemia, Effects of stroke, Parkinson's disease, Epilepsy, Cataracts, Muscular dystrophy, Cerebral palsy, Multiple sclerosis or effects of polio, and Thyroid or other glandular disorders.

[5] Respondents could answer the first question by indicating that their health was "poor," "fair," "good," "very good," and "excellent," and the second question by indicating that their health was "much worse," "somewhat worse," "about the same," "somewhat better," or "much better." These two questions were also combined into one single scale after

principal component analysis (one factor eigenvalue of 1.124, and factor loadings of 0.749).

[6] This question was not asked to respondents from the middle-aged sample.

[7] For the young-adult sample, the relationship between these two questions was determined after principal component analysis (one factor eigenvalue of 1.269, and factor loadings of 0.796). Respondents from the middle-aged sample were not asked the first question.

[8] I coded "No (0)" for cohabitation/marriage when respondents chose any of the following options: "I am not dating or seeing anyone right now," "I date, but do not have a steady, romantic relationship with one person," "I date one person on a regular basis but can still see other people," "I am in a steady, committed relationship but not engaged," and "I am engaged to be married (and don't live with my fiancé)." I considered "Yes (1)" for cohabitation/marriage when respondents chose any of the following options: "I live with my romantic partner, but we do not currently have plans to marry," "I live with my romantic partner and we are engaged to marry," and "I am married."

[9] Young-adult respondents could answer 0 for "None," 1 for "One or two days," 2 for "Three or four days," 3 for "Five or six days," 4 for "At least once every day," and 5 for "More than once every day." Middle-aged adults could answer 0 for "None," 1 for "Less than once a day," 2 for "Once a day," 3 for "8-12 times in the last week," and 4 for "Twice a day (or more)." In both scales, I verified the components compatibility with the latent construct through principal component analysis (for the young-adult scale, one factor scale with eigenvalue of 1.41, and factor loadings of 0.841; for middle-aged adults, one factor eigenvalue of 1.33, and factor loadings of 0.8156.

[10] I also recalculated the models estimates through ordinal logistic regressions, with robust standard error after running a Brant test. Thes models used a measure of medical

avoidance calculated as the row sum of each Likert scale score for the two construct components. Similar results were reached – see Annex 1.

[11] I tested for specification (Linktest, t = -0.598, p = 0.550), appropriate functional form (F (3,525): 0.452, p = 0.716), and influential observations (no distance above the cutoff for Cook's distance test) with no additional violations. Tests were performed on Model 3.

[12] I also tested for specification (Linktest, t = 1.722, p = 0.086), appropriate functional form (F (2,480): 2.413, p = 0.066), and influential observations (no distance above the cutoff for Cook's distance test) with no additional violations. Tests were performed on Model 3.

[13] To compare measures between the two samples, I transformed Likert-type scale variables so they have aligned scales, before performing all two-sample t-tests in this descriptive analysis. The transformation followed the linear scale transformation method developed by Liu et al. (2018) summarized by the following equation: "Y = (X - a) * ((B-A)/(b-a)) + A, where B is the highest point on the transformed scale, A is the lowest point on the transformed scale, b is the highest point on the raw scale, a is the lowest point on the raw scale, X is the original scale point, and Y is the transformed scale point" (Liu et al., 2018, p. 100). All transformations were performed so the Likert-type scale variable with more categories would be transformed to match the one with fewer categories. In this sense, for instance, medical avoidance for the Young-Adult sample was transformed from a 0-to-4 scale to a 0-to-3 scale. These transformations were not performed for the regression analysis, which was conducted considering the original variables' values.

[14] I conducted additional tests to determine whether biological sex could function as a moderator to the relationship between prison/jail exposure and medical avoidance in both samples, finding no statistically significant result. Furthermore, the interaction

term added little additional explanatory power (R^2) to the models, while compromising clarity in the interpretation of the predictors' main effect. The lack of a significant interaction might be explained by the small sample sizes in both samples, and the predominance of respondents who identified themselves as biological women among the older sample.

REFERENCES

Albertson, Elaine Michelle, Christopher Scannell, Neda Ashtari, and Elizabeth Barnert. 2020. "Eliminating Gaps in Medicaid Coverage during Reentry after Incarceration." *American Journal of Public Health* 110(3):317–21. Doi: 10.2105/AJPH.2019.305400.

Allison, Paul D. 1999. *Multiple Refression. A Primer*. Pine Forge Press.

Andersen, R. M. (1995). Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? Journal of Health and Social Behavior, 36(1), 1. https://doi.org/10.2307/2137284.

Andersen, R., & Newman, J. F. (2005). Societal and Individual Determinants of Medical Care Utilization in the United States. The Milbank Quarterly, 83(4), 1–28. https://doi.org/10.1111/j.1468-0009.2005.00428.x.

Anno, B. Jaye. 2001. *Correctional Healthcare Guidelines for the Management of an Adequate Delivery System*. Chicago, Illinois.

Arber, S., & Cooper, H. (1999). Gender differences in health in later life: The new paradox? Social Science and Medicine, 48(1), 61–76. https://doi.org/10.1016/S0277-9536(98)00289-5.

Armstrong, Katrina, Mary Putt, Chanita H. Halbert, David Grande, Jerome Sanford Schwartz, Kaijun Liao, Noora Marcus, Mirar B. Demeter, and Judy A. Shea. 2013. "Prior Experiences of Racial Discrimination and Racial Differences in Health Care System Distrust." *Medical Care* 51(2):144–50. Doi: 10.1097/MLR.0b013e31827310a1.

Barnert, Elizabeth, Cyrus Ahalt, and Brie Williams. 2020. “Prisons: Amplifiers of the COVID-19 Pandemic Hiding in Plain Sight.” *American Journal of Public Health* 110(7):964–66. Doi: 10.2105/AJPH.2020.305713.

Barnert, Elizabeth S., Christopher Scannell, Neda Ashtari, and Eleanor Albertson. 2022. “Policy Solutions to End Gaps in Medicaid Coverage during Reentry after Incarceration in the United States: Experts’ Recommendations.” *Journal of Public Health (Germany)* 30(9):2201–9. Doi: 10.1007/s10389-021-01483-4.

Berg, Mark T., Ethan M. Rogers, Man Kit Lei, and Ronald L. Simons. 2021. “Losing Years Doing Time: Incarceration Exposure and Accelerated Biological Aging among African American Adults.” *Journal of Health and Social Behavior* 62(4):460–76. Doi: 10.1177/00221465211052568.

Berg, Mark T., Eric A. Stewart, Jonathan Intravia, Patricia Y. Warren, and Ronald L. Simons. 2016. “Cynical Streets: Neighborhood Social Processes and Perceptions of Criminal Injustice*.” *Criminology* 54(3):520–47. Doi: 10.1111/1745-9125.12113.

Bertakis, K. D., Azari, R., Jay Helms, L., Callahan, E. J., & Robbins, J. A. (2000). Gender Differences in the Utilization of Health Care Services. The Hournal of Family Practice, 49(February).

Binswanger, I. A., M. F. Stern, R. A. Deyo, P. J. Heagerty, A. Cheadle, J. G. Elmore, and T. D. Koepsell. 2007. “Release from Prison – A High Risk of Death for Former Inmates.” *NEW ENGLAND JOURNAL OF MEDICINE* 356(2):157–65. Doi: 10.1056/NEJMsa064115.

Brayne, Sarah. 2014. “Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment.” *American Sociological Review* 79(3):367–91. Doi: 10.1177/0003122414530398.

Burns, Marguerite E., Steven Cook, Lars M. Brown, Laura Dague, Steve Tyska, Karla Hernandez Romero, Cici McNamara, and Ryan P. Westergaard. 2022. “Association between Assistance with Medicaid Enrollment and Use of Health Care after Incarceration among Adults with a History of Substance Use.” *JAMA Network Open* 5(1):1–12. Doi: 10.1001/jamanetworkopen.2021.42688.

Burns, Marguerite E., Steven T. Cook, Lars Brown, Steve Tyska, and Ryan P. Westergaard. 2021. “Increasing Medicaid Enrollment among Formerly Incarcerated Adults.” *Health Services Research* 56(4):643–54. Doi: 10.1111/1475-6773.13634.

Carbonaro, Richard. 2022. “System Avoidance and Social Isolation: Mechanisms Connecting Police Contact and Deleterious Health Outcomes.” *Social Science and Medicine* 301(March):114883. Doi: 10.1016/j.socscimed.2022.114883.

Carson, Ann, and Rich Kluckow. 2023. *Correctional Populations in the United States, 2021 – Statistical Tables*.

Cloud, David H., Ilana R. Garcia-Grossman, Andrea Armstrong, and Brie Williams. 2023. “Public Health and Prisons: Priorities in the Age of Mass Incarceration.” *Annual Review of Public Health* 44:407–28. Doi: 10.1146/annurev-publhealth-071521-034016.

Fazel, S., and J. Baillargeon. 2011. “The Health of Prisoners.” *LANCET* 377(9769):956–65. Doi: 10.1016/S0140-6736(10)61053-7.

Fiscella, K., Franks, P., & Clancy, C. M. (1998). Skepticism toward Medical Care and Health Care Utilization. Medical Care, 36(2), 180–189. https://www.jstor.org/stable/3767180.

Freudenberg, Nicholas, and Daliah Heller. 2016. "A Review of Opportunities to Improve the Health of People Involved in the Criminal Justice System in the United States." *Annual Review of Public Health* 37:313–33. Doi: 10.1146/annurev-publhealth-032315-021420.

Fu, Jeannia J., Maua Herme, Jeffrey A. Wickersham, Alexei Zelenev, Amy Althoff, Nickolas D. Zaller, Alexander R. Bazazi, Ann K. Avery, Jeff Porterfield, Alison O. Jordan, Dominique Simon-Levine, Martha Lyman, and Frederick L. Altice. 2013. "Understanding the Revolving Door: Individual and Structural-Level Predictors of Recidivism among Individuals with HIV Leaving Jail." *AIDS and Behavior* 17(SUPPL. 2):1–18. Doi: 10.1007/s10461-013-0590-1.

Goffman, Alice. 2009. "On the Run: Wanted Men in a Philadelphia Ghetto." *American Sociological Review* 74(3):339–57.

Haimson, Chloe E., Jessica T. Simes, John M. Eason, and Jienian Zhang. 2023. "The Impact of Carceral Churn and Healthcare Organizations on HIV/AIDS Incidence in Arkansas." *SSM – Population Health* 21(February):101355. Doi: 10.1016/j.ssmph.2023.101355.

Harding, David J., and Heather M. Harris. 2020. *After Prison: Navigating Adulthood in the Shadow of the Justice System*. New York: Russell Sage Foundation.

Haskins, Anna R., and Wade C. Jacobsen. 2017. "Schools as Surveilling Institutions? Paternal Incarceration, System Avoidance, and Parental Involvement in Schooling." *American Sociological Review* 82(4):657–84. Doi: 10.1177/0003122417709294.

Houle, Brian. 2014. "The Effect of Incarceration on Adult Male BMI Trajectories, USA, 1981–2006." *Journal of Racial and Ethnic Health Disparities* 1(1):21–28. Doi: 10.1007/s40615-013-0003-1.

Huh, Kil, Alex Boucher, Frances McGaffey, Matt McKillop, and Maria Schiff. 2017. *Prison Health Care: Costs and Quality*.

Kajeepeta, Sandhya, Pia M. Mauro, Katherine M. Keyes, Abdulrahman M. El-Sayed, Caroline G. Rutherford, and Seth J. Prins. 2021. "Association between County Jail Incarceration and Cause-Specific County Mortality in the USA, 1987–2017: A Retrospective, Longitudinal Study." *The Lancet Public Health* 6(4):e240–48. Doi: 10.1016/S2468-2667(20)30283-8.

Lara-Millán, Armando. 2014. "Public Emergency Room Overcrowding in the Era of Mass Imprisonment." *American Sociological Review* 79(5):866–87. Doi: 10.1177/0003122414549552.

Lara-Millán, Armando. 2021. *Redistributing the Poor*. Oxford University Press.

Lee, Chioun, Stephanie L. Ayers, and Jennie Jacobs Kronenfeld. 2009. "The Association between Perceived Provider Discrimination, Healthcare Utilization and Health Status in Racial and Ethnic Minorities." *Ethnicity and Disease* 19(3):330–37.

Littman, Aaron. 2022. "Free-World Law Behind Bars." *Yale Law Journal* 131(5):1385–1482.

Liu, Mengqiao, Alyssa K. McGonagle, and Gwenith G. Fisher. 2018. "Sense of Control, Job Stressors, and Well-Being: Inter-Relations and Reciprocal Effects among Older U.S. Workers." *Work, Aging and Retirement* 4 (1): 96–107. https://doi.org/10.1093/ampere/waw035.

Lynch, S. M. (2003). Cohort and Life-Course Patterns in the Relationship between Education and Health: A Hierarchical Approach. Demography, 40(2), 309. https://doi.org/10.2307/3180803.

Mallik-Kane, Kamala. 2005. “Returning Home Illinois Policy Brief: Health and Prisoner Reentry.” 1–6.

Mallik-Kane, Kamala, and Christy A. Visher. 2008. “Health and Prisoner Reentry: How Physical, Mental, and Substance Abuse Conditions Shape the Process of Reintegration.” *Urban Institute Justice Policy Center* 1–67.

Maruschak, Laura, Karishma A. Chari, Alan E. Simon, and Carol J. DeFrances. 2016. “National Survey of Prison Health Care: Selected Findings.” *National Health Statistics Reports* (96):1–23.

Massoglia, Michael. 2008a. “Incarceration as Exposure: The Prison, Infectious Disease, and Other Stress-Related Illnesses.” *Journal of Health and Social Behavior* 49(1):56–71. Doi: 10.1177/002214650804900105.

Massoglia, Michael. 2008b. “Incarceration, Health, and Racial Disparities in Health.” *Law & Society Review* 42(2):275–306.

Massoglia, Michael, and William Alex Pridemore. 2015. “Incarceration and Health.” *Annual Review of Sociology* 41(1):291–310. Doi: 10.1146/annurev-soc-073014-112326.

Mays, Vickie M., Susan D. Cochran, and Namdi W. Barnes. 2007. “Race, Race-Based Discrimination, and Health Outcomes among African Americans.” *Annual Review of Psychology* 58:201–25. Doi: 10.1146/annurev.psych.57.102904.190212.

McNeeley, Susan, Valerie A. Clark, and Grant Duwe. 2023. “Risk Factors for All-Cause, Natural, and Unnatural Deaths among Individuals Released from State Prison.” *Journal of Criminal Justice* 86(January):102059. Doi: 10.1016/j.jcrimjus.2023.102059.

Mehmet, Mehmetoglu, and Tor Georg Jakobsen. 2022. *Applied Statistics Using Stata. A Guide for the Social Sciences*. 2nd ampere . SAGE Publications Inc.

Miller, Reuben, and Amanda Alexander. 2016. "The Price of Carceral Citizenship: Punishment, Surveillance, and Social Welfare Policy in an Age of Carceral Expansion." *Michigan Journal of Race & Law* 36(21.2):291. Doi: 10.36643/mjrl.21.2.price.

Miller, Reuben Jonathan. 2014. "Devolving the Carceral State: Race, Prisoner Reentry, and the Micro-Politics of Urban Poverty Management." *Punishment and Society* 16(3):305–35. Doi: 10.1177/1462474514527487.

Morgan, Kayla Martha, Dale Dagar Maglalang, Mollie A. Monnig, Jasjit S. Ahluwalia, Jaqueline C. Avila, and Alexander W. Sokolovsky. 2022. "Medical Mistrust, Perceived Discrimination, and Race: A Longitudinal Analysis of Predictors of COVID-19 Vaccine Hesitancy in US Adults." *Journal of Racial and Ethnic Health Disparities* 1846–55. Doi: 10.1007/s40615-022-01368-6.

Morrissey, Joseph P., Gary S. Cuddeback, Alison Evans Cuellar, and Henry J. Steadman. 2007. "The Role of Medicaid Enrollment and Outpatient Service Use in Jail Recidivism among Persons with Severe Mental Illness." *Psychiatric Services* 58(6):794–801. Doi: 10.1176/ps.2007.58.6.794.

National Center for Health Statistics. 2021. "Table HcareVis. Visits to Physician Offices and Hospital Emergency Departments, by Age, Sex, and Race: United States, Selected Years 2000–2018." Retrieved (https://www.cdc.gov/nchs/hus/data-finder.htm).

Patler, Caitlin, and Gabriela Gonzalez. 2021. "Compounded Vulnerability: The Consequences of Immigration Detention for Institutional Attachment and System Avoidance in Mixed-Immigration-Status Families." *Social Problems* 68(4):886–902. Doi: 10.1093/socpro/spaa069.

Patterson, Evelyn J. 2010. “Incarcerating Death: Mortality in U.S. State Correctional Facilities, 1985-1998.” *Demography* 47(3):587–607. Doi: 10.1353/dem.0.0123.

Remster, Brianna, and Rory Kramer. 2018. “Race, Space, and Surveillance: Understanding the Relationship between Criminal Justice Contact and Institutional Involvement.” *Socius* 4. Doi: 10.1177/2378023118761434.

Rold, William J. 2008. “Thirty Years After Estelle v. Gamble: A Legal Retrospective.” *Journal of Correctional Health Care* 14(1):11–20. Doi: 10.1177/1078345807309616.

Ross, C. E., & Wu, C. (1995). The Links Between Education and Health. American Sociological Review, 60(5), 719. https://doi.org/10.2307/2096319.

Roy, K., & Chaudhuri, A. (2008). Influence of socioeconomic status, wealth and financial empowerment on gender differences in health and healthcare utilization in later life: evidence from India. Social Science and Medicine, 66(9), 1951–1962. https://doi.org/10.1016/j.socscimed.2008.01.015.

Schlanger, Margo. 2018. “The Constitutional Law of Incarceration, Reconfigured.” *Cornell Law Review* 103(2):357–436. Doi: 10.2139/ssrn.2920283.

Schnittker, Jason, and Andrea John. 2007. “Enduring Stigma: The Long-Term Effects of Incarceration on Health.” *Journal of Health and Social Behavior* 48(2):115–30. Doi: 10.1177/002214650704800202.

Schnittker, Jason, Michael Massoglia, and Christopher Uggen. 2022. *Prisons and Health in the Age of Mass Incarceration*. Oxford University PressNew York.

Schnittker, Jason, Christopher Uggen, Sarah Shannon, and Suzy Maves Mcelrath. 2015. “The Institutional Effects of Incarceration: Spillovers From Criminal Justice to Health Care.” *Milbank Quarterly* 93(3):516–60. Doi: 10.1111/1468-0009.12136.

Sewell, Alyasah A. 2015. “Disaggregating Ethnoracial Disparities in Physician Trust.” *Social Science Research* 54:1–20. Doi: 10.1016/j.ssresearch.2015.06.020.

Shannon, S. K. S., C. Uggen, J. Schnittker, M. Thompson, S. Wakefield, and M. Massoglia. 2017. “The Growth, Scope, and Spatial Distribution of People With Felony Records in the United States, 1948–2010.” *Demography* 54(5):1795–1818. Doi: 10.1007/s13524-017-0611-1.

Spaulding, Anne C., Ryan M. Seals, Victoria A. McCallum, Sebastian D. Perez, Amanda K. Brzozowski, and N. Kyle Steenland. 2011. “Prisoner Survival inside and Outside of the Institution: Implications for Health-Care Planning.” *American Journal of Epidemiology* 173(5):479–87. Doi: 10.1093/aje/kwq422.

Testa, Alexander, and Lauren C. Porter. 2023. “Previous Incarceration, Health Insurance, and the Affordable Care Act in the US.” *American Journal of Preventive Medicine*. Doi: 10.1016/j.amepre.2023.06.014.

Travis, C. B., Meltzer, A. L., & Howerton, D. M. (2010). Gender and Health-Care Utilization. In Handbook of Gender Research in Psychology (pp. 517–540). Springer New York. https://doi.org/10.1007/978-1-4419-1467-5_22

Wacquant, Loic. 2001. “Deadly Symbiosis.” *Punishment & Society* 3(1):95–133. Doi: 10.1177/14624740122228276.

Wakeman, Sarah E., Margaret E. McKinney, and Josiah D. Rich. 2009. “Filling the Gap: The Importance of Medicaid Continuity for Former Inmates.” *Journal of General Internal Medicine* 24(7):860–62. Doi: 10.1007/s11606-009-0977-x.

Wang, Emily A., Clemens S. Hong, Shira Shavit, Ronald Sanders, Eric Kessell, and Margot B. Kushel. 2012. “Engaging Individuals Recently Released from Prison into Primary

Care: A Randomized Trial." *American Journal of Public Health* 102(9):22–29. Doi: 10.2105/AJPH.2012.300894.

Wildeman, Christopher, and Emily A. Wang. 2017. "Mass Incarceration, Public Health, and Widening Inequality in the USA." *The Lancet* 389(10077):1464–74. Doi: 10.1016/S0140-6736(17)30259-3.

Williams, D. R., & Collins, C. (1995). US Socioeconomic and Racial Differences in Health: Patterns and Explanations. Annual Review of Sociology, 21(1), 349–386. https://doi.org/10.1146/annurev.so.21.080195.002025

Willis, Don E., Jennifer A. Andersen, Brooke E. E. Montgomery, James P. Selig, Sumit K. Shah, Nickolas Zaller, Keneshia Bryant-Moore, Aaron J. Scott, Mark Williams, and Pearl A. McElfish. 2023. "COVID-19 Vaccine Hesitancy and Experiences of Discrimination Among Black Adults." *Journal of Racial and Ethnic Health Disparities* 10(3):1025–34. Doi: 10.1007/s40615-022-01290-x.

Wilper, Andrew P., Steffie Woolhandler, J. Wesley Boyd, Karen E. Lasser, Danny McCormick, David H. Bor, and David U. Himmelstein. 2009. "The Health and Health Care of US Prisoners: Results of a Nationwide Survey." *American Journal of Public Health* 99(4):666–72. Doi: 10.2105/AJPH.2008.144279.

Zhao, Jingxuan, Xuesong Han, Zhiyuan Zheng, Qinjin Fan, Kewei Shi, Stacey Fedewa, K. Robin Yabroff, and Leticia Nogueira. 2023. "Incarceration History and Health Insurance and Coverage Changes in the U.S." *American Journal of Preventive Medicine* 64(3):334–42. Doi: 10.1016/j.amepre.2022.09.023.

APPENDIX A

Table 7: Ordinal logistic regression – Young Adult Sample

	Model 1	Model2	Model 4
Prison/jail exposure	1.478*	1.452*	1.419*
	(0.241)	(0.239)	(0.233)
Age	1.073	1.080	1.053
	(0.101)	(0.101)	(0.100)
Biological Sex	0.455***	0.475***	0.467***
	(0.078)	(0.081)	(0.811)
Marital Status	1.458	1.523	1.559
	(0.618)	(0.621)	(0.629)
Education	1.188	1.380*	1.372*
	(0.150)	(0.179)	(0.174)
Healthy Affordability		0.532***	0.580***
		(0.123)	(0.076)
Health Insurance		-0.475+	0.607
		(0.258)	(0.1599)
Negative Experiences			1.336
			(0.229)
Healthy Eating			0.979
			(0.033)
Health Conditions			1.037
			(0.091)
cut1	1.212	-0.219	-0.687
	(2.783)	(2.752)	(2.764)
cut2	1.751	0.360	-0.104
	(2.777)	(2.749)	(2.761)
cut3	3.347	2.048	1.593
	(2.778)	(2.748)	(2.759)
cut4	3.873	2.601	2.147
	(2.780)	(2.752)	(2.763)
cut5	4.835	3.607	3.154
	(2.776)	(2.750)	(2.761)
cut6	5.460	4.241	3.789
	(2.793)	(2.764)	(2.773)
cut7	5.777*	4.557	4.104
	(2.791)	(2.761)	(2.769)
Pseudo R^2	0.020	0.044	0.047

Note: Robust standard errors applied. Standard errors in parentheses. Coefficients presented as

odds ratio. *$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$