When Is the Next Available?
A Field Experiment Measuring Race and Ethnicity Discrimination in Booking Medical Appointments

JANNA WISNIEWSKI
RESEARCH ASSISTANT PROFESSOR, SCHOOL OF PUBLIC HEALTH
TULANE UNIVERSITY
JWISNIE@TULANE.EDU

BRIGHAM WALKER
PH.D. CANDIDATE
DEPARTMENT OF ECONOMICS
TULANE UNIVERSITY
BWALKER6@TULANE.EDU

PATRICK BUTTON
ASSISTANT PROFESSOR DEPARTMENT OF ECONOMICS, TULANE UNIVERSITY
NIH/NIA POSTDOCTORAL SCHOLAR, RAND
PBUTTON@TULANE.EDU

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Today's Talk

- Share Pilot Results

- Describe Full National Study

- Seek Feedback on Both

Introduction

- **On average, minorities suffer a disproportionate burden of disease in the U.S.** (Blair et al (2013), Dovidio et al (2012), Horn et al (2014), Mayberry et al (2000), Noonan et al (2016), Penner et al (2014), Ray et al (2015), Velasco-Mondragon et al (2016), Weinick et al (2000))

- **Minorities report health discrimination in greater proportions** (Hausmann et al (2008))
  - **Also spend longer in the waiting room at the office and ED** (Ray et al (2015), James et al (2005))
  - **Delays may impact health and increase costs** (Boudreau et al (2004), Himelhoch et al (2004))

- **Differences in access found experimentally by insurance** (Rhodes et al (2014), Sharma et al (2015))
  - **Some evidence of differences by race/ethnicity found** (Sharma et al (2015, 2017), Kugelmass (2016))
  - **Experiments on discrimination are still rare in health settings** (Hansen et al (2015), Sharma et al (2015))

- **We report pilot results and a proposed national study of discrimination in access to appointments**

Pilot Methodology and Data

- **Overall Design:** In 2017-2018, seven secret shoppers (2 Hispanic, 2 Black, 3 White) were randomly assigned to primary care offices (75% / 1,081 reached) in Houston/Dallas/Fort Worth to schedule an appointment

- **Callers:** Uninsured and employed females of about the same age

- **Race/Ethnicity Signals:** Callers were the race/ethnicity they signaled and used fake but plausible names (e.g., Felicia Jackson (Black), Emily McConnell (White), Maria Rodriguez (Hispanic))

- **Key Questions, Analyzed with Simple Regressions:**
  - How were callers treated? (e.g., questions asked)
  - Were they offered appointments?
  - How long did the patient have to wait until their appointment?

- **Basic Metrics:** 53.8% were offered an appointment and the average days to appointment are 10.8 days

Pilot Randomization Worked

Randomization Outcome	Mean	Summary Obs	Statistics Min	Max	Regression Black	Estimates Hispanic
Socioeconomic and Market Variables						
Percent HS Grad or Higher	86.2%	1.023	43.1%	100%	1.123 (0.983)	1.433* (0.857)
Percent Employed	67.6%	1,023	21.1%	90.2%	1.582** (0.672)	0.742 (0.527)
Median Earnings	$31,565	1,007	$13,269	$71,250	-92.0 (949)	-640 (822)
Percent Insured	83.3%	1,023	56.6%	98.6%	0.091 (0.844)	0.557 (0.727)
Healthcare Provider Shortage Area	.007	1,081	0	1	0.005 (0.008)	-0.004 (0.005)
Race, Ethnicity, and Nativity Variables						
Percent Born in US	76.6%	1,023	43.9%	98.6%	-1.175 (0.856)	0.198 (0.740)
Percent Born in Africa	6.7%	1,023	0%	100%	0.856 (0.585)	0.480 (0.395)
Percent Black or African American	15.4%	1,023	0.2%	85.9%	-1.390 (1.116)	0.157 (1.043)
Percent Born in Latin Ameria	48.5%	1.023	0%	99.5%	-2.362 (2.129)	-1.127 (1.848)
Percent Hispanic or Latino	26.7%	1,023	0%	95%	-0.376 (1.548)	-1.570 (1.283)
Percent Spanish Speakers	21.8%	1,023	0%	85.8%	-0.113 (1.435)	-1.065 (1.199)
Percent Who Speak English Only	66.1%	1,023	14%	100%	-0.787 (1.357)	0.987 (1.158)
Percent Who Speak English 'Less Than Very Well'	13.7%	1,023	0%	62.4%	0.043 (0.855)	-0.813 (0.729)

Questions Asked, by Race
Minority patients were asked more about insurance

$$\text{Outcome}_i = \alpha + \beta \times \text{Black}_i + \delta \times \text{Hispanic}_i + \varepsilon_i$$

Black = indicator for black callers, *Hispanic* = indicator for Hispanic callers

	Insurance?	Married?	No Patients	Pregnant?	Ethnicity?	SSN?	Visit Reason?
Black Patient	0.421***	-0.00134	-0.0243**	-0.00901**	-0.00736	-0.0765***	-0.00405
	(0.0359)	(0.0120)	(0.0111)	(0.00449)	(0.00636)	(0.0275)	(0.00897)
Hispanic Patient	0.221***	0.0461***	-0.0255**	-0.00901**	0.0334***	-0.194***	-0.0131**
	(0.0330)	(0.0151)	(0.0103)	(0.00449)	(0.0117)	(0.0188)	(0.00648)
Constant	0.259***	0.0248***	0.0360***	0.00901**	0.0113**	0.194***	0.0158***
	(0.0208)	(0.00739)	(0.00886)	(0.00449)	(0.00501)	(0.0188)	(0.00592)
Observations	1081	1081	1081	1081	1081	1081	1081

Standard errors in parentheses
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Note: Insurance question was asked 43.7% of the time overall

Offer Rates & Days to Appointment, by Race
Minorities initially offered more often and later; insurance and time controls remove all effects

$$\text{Outcome}_i = \alpha + \beta \times \text{Black}_i + \delta \times \text{Hispanic}_i \; [+ \lambda \times \text{Insurance\_Asked} + \text{Time} \times \theta_i] + \varepsilon_i$$

	Offer	+ Controls	Days	+ Controls
Black Patient	0.364***	0.0447	3.650**	3.482
	(0.0358)	(0.0376)	(1.567)	(2.206)
Hispanic Patient	0.210***	0.0380	2.644*	0.255
	(0.0342)	(0.0328)	(1.602)	(1.961)
Insurance Asked		0.714***		-0.0827
		(0.0229)		(1.836)
Observations	1081	1081	581	581

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Outcomes with Insurance and Minority Interactions
Insurance question drives effects, but black callers were disproportionately affected when asked

$Outcome_i = \alpha + \beta \times Black_i$

$+ \rho \times Black_i \times Insurance_i$

$+ \delta \times Hispanic_i$

$+ \lambda \times Hispanic_i \times Insurance_i$

$+ \theta \times Insurance_i$

$+ Time \times \theta_i + \varepsilon_i$

	Offer	Days
Black Patient	-0.0226	-6.702
	(0.0554)	(4.141)
Black x Insurance Asked	0.123**	13.24***
	(0.0581)	(4.567)
Hispanic Patient	0.0540	-1.976
	(0.0432)	(3.733)
Hispanic x Insurance Asked	-0.0286	3.637
	(0.0517)	(4.016)
Insurance Asked	0.700***	-3.495
	(0.0361)	(2.892)
Observations	1081	581

Standard errors in parentheses
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

How to Understand these Results

- **Race is not predictive of offer or days independent of insurance inquiry**

- **Asking about insurance is independently positively predictive of offers**

  - Asking about insurance may imply concern about ability to pay, and black and Hispanic patients were asked more often (68% and 48% vs. 26%)

  - All were uninsured (unknown until asked) and being asked allowed callers to assert they can pay; **but, why would this matter *more* for black patients?**

    - No evidence to suggest that minorities are offered less when not asked (so, practices aren't discounting their ability to pay when not asking)

    - **… and why positive for offer (+12 pct pts) and days delay (+13 days)?**

Notes: 43.7% were asked about insurance; 53.8% were offered appointments; 10.8 avg days to appt   9

Some Ideas

Why would knowing ability to pay matter *more* for black patients?

1. Providers *value diversity* or *fear lawsuits* (qualified black self-payers accommodated)

2. Black-black concordance

3. Insurance asked if overbooked and white pts assumed to not accept delay so not offered

4. Providers begrudgingly offer bad appts to black patients to dissuade booking

Why positive for offer (+12 pct pts) and days delay (+13 days)?

1. Providers then offer appointment even if booked, pushing wait days into the future

2. Accommodations made (like above)

3. Presumed differences in preferences lead to more but later offers

4. Offer as a disingenuous gesture of access is coupled with an arbitrarily later appt

What Next?

- **Need to Better Tease Out Drivers Nationally**

  - Pilot shows differential treatment by race through correlations with insurance (but may be underpowered, missing concordance and gender, etc.)

  - Larger, national, study will better quantify discrimination by randomizing *insurance status* along with gender, method of signaling race, and by expanding the study from urban Texas to the entire country

  - Other strata, like hospital-affiliated vs. privately-owned, regional characteristics, reason for visit, and racial concordance will be assessed

National Study Aims

		We hypothesize that…	*So we will include…*
1.	Quantify PCP discrimination for black/Hispanic/women	1. …whites are offered appointments sooner; we think men will be offered sooner too	1. …men as controls
2.	Explore whether urgency/pain matter	2. …discrimination is *stronger* when appts are related to pain or are more urgent	2. …urgent, pain-based, well care visits
3.	Determine if provider demographics matter	3. …concordances will increase appointment offer rates and reduce wait times	3. …data on provider race/ethnicity
4.	Assess other factors	4. …other factors such as local demographics, race/ethnicity and gender intersectionality, and areas with higher prejudice matter	4. …these factors and compare estimates by contexts

National Study Design

- **Callers:** Between the ages of 18 and 35, roughly equal shares of callers who are Black, Hispanic, White, male, and female; will make 20,179 office calls

- **Same Scripts:** Supply same personal info as asked (e.g., employment, address, date of birth)

- **Matching Callers to Offices:** Stratified random sampling based on state. Randomizing (1) names/SES, race/ethnicity, gender, and (2) insurance status, visit reason.

- **Name Signals:** Use names of both high and low SES to control for the SES signal of the name

- **Voice Signals:** Record test calls and have those surveyed indicate the accent, gender, race, ethnicity, and SES; then create variables for strength of voice signal

Insurance Status and Reason for Visit
Scripts and daily insurance assignment will be used

- **Reason for Visit:** Randomly assign different reasons for an appointment

- **Insurance:** Randomly assign daily the insurance status disclosed when requested (uninsured, Medicaid insured, and privately insured with a state-specific insurer)

Visit Type	Sample Script
Well Care	"I'm calling to schedule an annual well care visit. I recently moved to the area. It's been a few years since I've seen the doctor. I feel fine and am just interested in a regular check-up." (From Polsky (2015))
Urgent Care	"I had my blood pressure checked at the pharmacy and it was high, so I'd like to have it checked out by a doctor. I don't remember the exact reading – maybe 180 over 100 or so. It's been a while since I've seen the doctor. My parents and my siblings have high blood pressure. I feel fine otherwise. I'm not taking any medications." (From Polsky (2015))
Pain	"I'm having a lot of pain in my lower stomach. I've had this pain on-and-off for two weeks. It's a dull pain that comes and goes." (From pilot study)

Hypothesized Outcome Results

$$\text{Outcomes}_i = \beta_0 + \boldsymbol{\beta_1 \text{Black}_i} + \boldsymbol{\beta_2 \text{Hispanic}_i} + \boldsymbol{\beta_3 \text{Female}_i} + \text{Controls}_i \beta_4 + \varepsilon_i$$

Outcome Variable	Pilot Results	Hypothesized Effects
Appointment is offered	37.8% White 74.2% African American 58.8% Hispanic	Unclear, we expected fewer offers for minorities but didn't hold in pilot
Days to offered appointment	8.6 White 12.2 African American 11.2 Hispanic	Longer wait times for minorities
Appointment length	Not included	Unclear
Caller is asked about… …their race or ethnicity	No stat. sig. differences	(+) African Americans and Hispanics
…languages spoken	Not included	(+) Hispanics
…their marital status	Asked more often for Hispanics	(+) Women, especially of color
…their insurance status	Asked more often for African Americans and Hispanics	(+) Women, African Americans, and Hispanics
…income or employment	Not included	(+) Women, African Americans, and Hispanics

Interaction Specifications

$$\text{Outcome}_i = \beta_0 + \beta_1 \text{Black}_i + \beta_2 \text{Hispanic}_i + \beta_3 \text{Female}_i + \beta_4 \text{Factor}_i$$
$$+ \boldsymbol{\beta_5 \text{Black}_i * \text{Factor}_i} + \boldsymbol{\beta_6 \text{Hispanic}_i * \text{Factor}_i} + \boldsymbol{\beta_7 \text{Female}_i * \text{Factor}_i} + \text{Controls}_i \beta_8 + \varepsilon_i$$

Interaction Variable	Notes / Hypothesized Effect on Discrimination	Data Source
Name & Voice Signal	Addresses: Which signals are generating our results?	-
Name (+ Caller FE)	Addresses: Do name signals affect discrimination?	-
Low SES	Addresses: Do our names also signal SES?	-
Pain & Urgent Visits	(+) Pain discounted for women and minorities	-
Concordance	(-) Caller and scheduler/MD matches	-
Intersectionality	(+) Women of color (Grollman et al (2014))	-
% Black / Hispanic	(-/0) More diverse (Charles et al (2008), Giulietti et al (2015))	ACS
Higher prejudice areas	(+) Prejudiced areas (Charles et al (2008), Fisman et al (2008))	General Social Survey
HPSAs	(+) HPSA (Baert et al (2015), Johnston et al (2015))	HHS
Taking new patients	(-/0) Actively seeking new patients with no shortages	Health insurance websites
Ownership	(+) Private practices have more patient choice discretion	-

Our Biggest Concern: Uncontrolled differences between callers by race, ethnicity, or gender

- **An average difference between callers by race (like experience in making calls) may lead to average differences that are entirely independent of race**

- **Control Directly for Caller Differences:** Experience in making calls, accent, and perceived SES. Also control for signal of race/ethnicity *within* and *between* callers that could cause this bias.

- **Use Names of Different SES:** Since names signal SES, we will use Black, Hispanic, and White names of different SES to investigate whether SES signals generate results and to control for it