Racial and Ethnic Disparities in Primary Care Use and the COVID-19 Pandemic

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Racial and Ethnic Disparities in Primary Care Use

- Large and persistent racial and ethnic disparities in primary health care access and use
  - Black and Hispanic patients face higher barriers to receiving adequate care than non-Hispanic whites

    (e.g.: Obermeyer et al., 2019; Parekh et al., 2018; Shi et al., 2014; Flores, 2010; Stevens and Shi, 2003)

- Timely primary care is seen as important for improving patient health and reducing health care costs (e.g.: Shi, 2012; Friedberg et al, 2010; Starfield et al., 2005)
  - Disparities in care may contribute to disparities in health outcomes

- COVID-19 has created unprecedented challenges for the health care system; little is known about how these disparities have evolved during the pandemic

COVID-19 and Primary Care Use: What We Know So Far

- Federal, state, and local regulations → many health care providers have had to limit or cease normal operations
- Individuals have changed their behavior due to loss of employer-provided health insurance and concerns about exposure to the virus
  - Nationally representative survey of non-elderly adults in May 2020: almost half of adults in families who have lost work-related income are foregoing health care (Gonzalez et al., 2020)
- Emerging evidence:
  - Overall reduction in outpatient / primary care use across various data sources (Alexander et al., 2020; Chatterji & Li, 2020; Mehrotra et al., 2020; Ziedan, Simon & Wing, 2020; Basu et al., 2020; Cantor et al., 2020; Whaley et al., 2020)
  - Improved access for some types of care (e.g. mental health, urgent care) due to increased use of telehealth (Mann et al., 2020; Ziedan, Simon & Wing, 2020; Mehrotra et al., 2020; Jaffe et al., 2020)
  - Impacts appear to be driven by individual behavior changes rather than policies (e.g., stay-at-home orders)

COVID-19 and Racial/Ethnic Disparities: What We Know So Far

- Black and Hispanic individuals are both more likely to contract the virus, and more likely to die from it, than non-Hispanic whites (McLaren, 2020; Benitez et al., 2020; Knittel & Ozaltun, 2020; Hooper et al., 2020; van Dorn et al., 2020; Tai et al., 2020)
- But what about disparities in care utilization for those who have not contracted the virus?
  - Do minorities bear a disproportionate cost of the pandemic on this margin as well? Are there differences between children vs. prime-age adults vs. those age 65+?
    - Whaley et al. (2020) show that commercially-insured patients in majority racial/ethnic minority ZIP codes experienced smaller reductions in outpatient visits in March/April 2020, but do not have individual-level race/ethnicity data
- Less is known about other racial groups (e.g. Asians, American Indians) due to sample size constraints

This Paper

We use novel, large-scale "real-time" data from more than 1,000 family medicine practices in the U.S. to answer the following questions:

1. How did primary care use change in the first few months of the pandemic relative to prior years?
2. What were the differences in primary care use across five racial/ethnic groups before and during the pandemic?
   - Hispanic, non-Hispanic Black, non-Hispanic white, non-Hispanic Asian, non-Hispanic American Indian/Alaska Native
3. Are the baseline disparities and pandemic-related changes in disparities different across patients of different ages?
   - Under 18, 18-64, 65+
4. Are the baseline disparities and pandemic-related changes in disparities different across different types of visits?
   - Preventive, Vaccines, Other (non-Preventive/Vaccine-related) Visits

Data and Sample

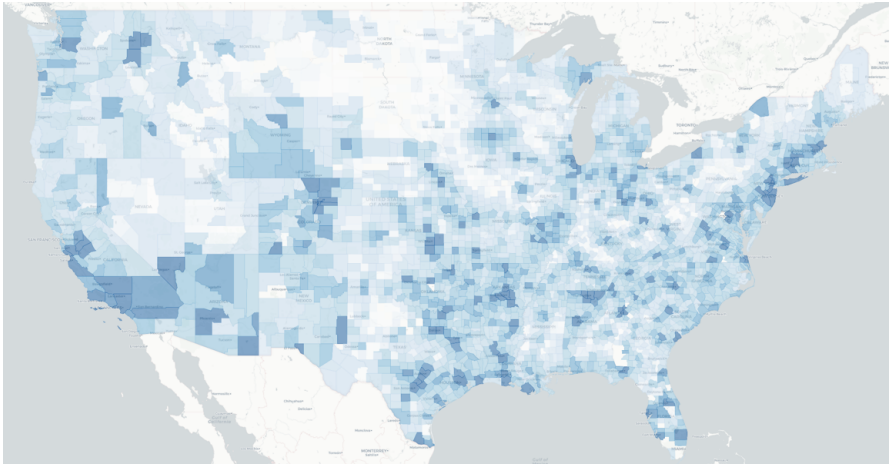
Prime Registry: a Qualified Clinical Data Registry certified by the Centers for Medicaid and Medicare

- Electronic medical record (EMR) information on health care delivered by >1,200 family medicine practices; 5.8 million patients seen since 2015
- Patient race/ethnicity, age, gender, health insurance status, diagnosis and CPT codes

We identify 4 cohorts of patients who had at least one visit in: 2016, 2017, 2018, and 2019

- Also limit to a consistent set of practices reporting data in each February of 2016–2020
- Analyze patients' return visits in each week of the following year, through week 21 (for now)
- For 5 racial/ethnic groups
- For children, prime-age adults, older adults
- For preventive, vaccine-related, and other visits

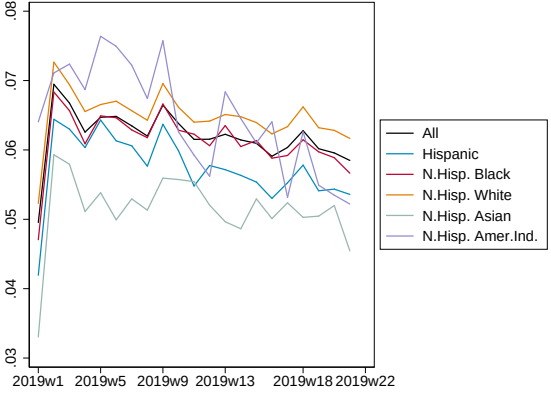
Prime Registry Patient Locations



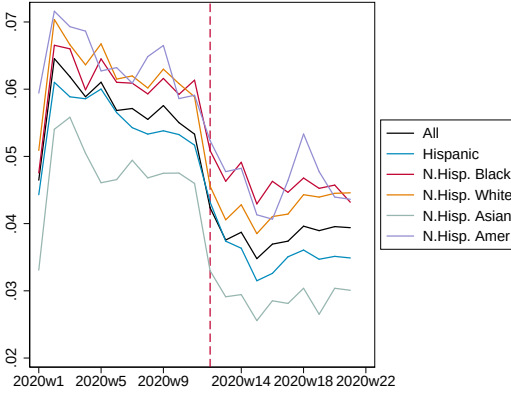
Sample Characteristics

	2016 Cohort	2017 Cohort	2018 Cohort	2019 Cohort
Patient Characteristics				
Age	47.455	47.705	48.152	48.526
Male	0.437	0.440	0.440	0.443
Hispanic	0.096	0.097	0.094	0.094
Non-Hisp. Black	0.064	0.063	0.061	0.057
Non-Hisp. White	0.612	0.600	0.585	0.571
Non-Hisp. Asian	0.018	0.018	0.018	0.018
Non-Hisp. American Indian/Alaska Native	0.003	0.003	0.003	0.003
Return Visits Through Week 21 Of Next Year				
Any Preventive Visit	0.091	0.079	0.065	0.043
Any Vaccine-Related Visit	0.009	0.010	0.014	0.006
Any Other Visit	0.573	0.544	0.524	0.418
Number Patients	1,946,879	2,138,176	2,187,879	2,209,566

Share Patients With Return Visit by Week, 2018 vs. 2019 Cohorts

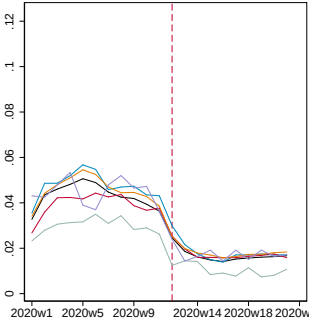


2018 Cohort

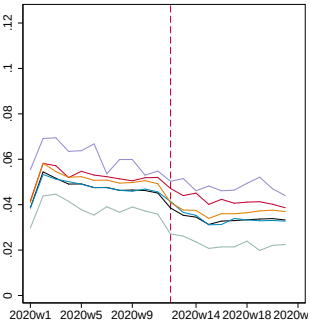


2019 Cohort

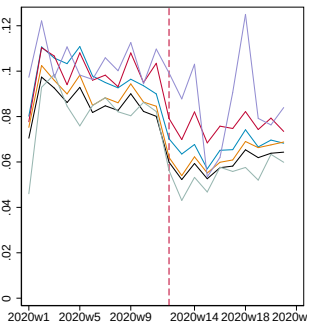
Share Patients With Return Visit by Week, 2019 Cohort



Children



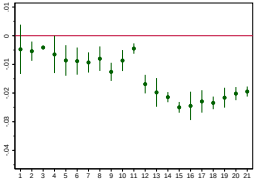
Adults 18-64



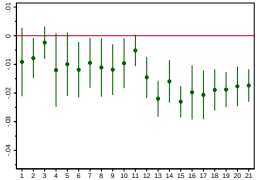
Age 65+

All Hispanic N.Hisp. Black N.Hisp. White N.Hisp. Asian N.Hisp. Amer.Ind.

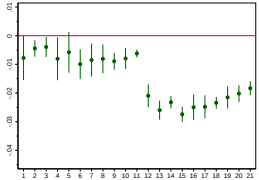
Effect of COVID-19 on Primary Care: Week-by-Week Coefficients for Each Race/Ethnicity Group, Accounting for Typical Seasonality



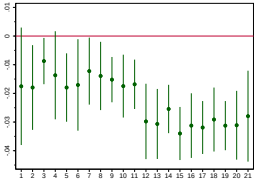
Hispanic



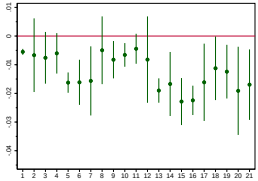
Non-Hispanic Black



Non-Hispanic White



Non-Hispanic Asian



Non-Hisp. Amer. Indian

Empirical Model

Collapse data into cohort $\times$ week of year $\times$ patient race/ethnicity cells

$$\begin{aligned} ReturnVisit_{wyr} = \alpha_0 + \alpha_1 \mathbf{1}[week_{wy} \geq week12, 2020] + \delta_r \\ + \kappa_r \times \mathbf{1}[week_{wy} \geq week12, 2020] + \theta_{wr} + \varepsilon_{wyr} \end{aligned}$$

- Outcomes: return visits per 1,000 patients in week w of year y by patients of race/ethnicity r
- Week 12, 2020 starts on March 16, 2020
  (note: National Emergency declared on March 13, 2020)
- Standard errors clustered on race$\times$week level

Effect of COVID-19 on Patients' Return Visits per 1,000 Patients

	Any Visit	Preventive	Vaccine-Related	Other
After Week 12, 2020	-23.07***	-2.355***	-0.398***	-20.40***
	[0.990]	[0.152]	[0.0181]	[0.848]
Hispanic	-9.221***	-0.0877	-0.0133**	-9.095***
	[0.331]	[0.0609]	[0.00639]	[0.286]
Non-Hisp. Black	-3.173***	0.133**	-0.138***	-3.188***
	[0.337]	[0.0615]	[0.00776]	[0.290]
Non-Hisp. Asian	-5.495***	1.603***	0.283***	-7.378***
	[0.322]	[0.0544]	[0.0140]	[0.283]
Non-Hisp. American	-3.635***	-1.300***	-0.0519***	-2.223***
Indian/Alaska Native	[0.483]	[0.0779]	[0.0126]	[0.444]
Hispanic ×	1.547	0.00748	-0.0331	1.533
After Week 12, 2020	[1.325]	[0.244]	[0.0256]	[1.146]
Non-Hisp. Black	4.215***	-0.308	0.146***	4.398***
× After Week 12, 2020	[1.350]	[0.246]	[0.0310]	[1.161]
Non-Hisp. Asian	-7.178***	-1.855***	-0.257***	-5.070***
× After Week 12, 2020	[1.287]	[0.218]	[0.0561]	[1.131]
Non-Hisp. American	6.560***	0.948***	-0.000600	5.563***
Indian / Alaska Native × After Week 12, 2020	[1.933]	[0.312]	[0.0505]	[1.777]
Dependent variable mean	61.05	3.729	0.581	56.84
Number of race-by-week cells	420	420	420	420

Effect of COVID-19 on **Child** Patients' Return Visits

	(1) Any Visit	(2) Preventive	(3) Vaccine	(4) Other
After Week 12, 2020	-24.36***	-3.383***	-1.312***	-20.13***
	[1.106]	[0.285]	[0.0630]	[0.945]
Hispanic	3.746***	0.382***	-0.233***	3.525***
	[0.483]	[0.123]	[0.0192]	[0.439]
Non-Hisp. Black	-1.798***	0.274***	-0.270***	-1.971***
	[0.493]	[0.0991]	[0.0393]	[0.419]
Non-Hisp. Asian	-9.012***	0.874***	0.0241	-10.11***
	[0.379]	[0.126]	[0.0612]	[0.380]
Non-Hisp. American Indian/Alaska Native	-4.058***	-3.349***	-0.732***	-0.0639
	[0.518]	[0.252]	[0.0576]	[0.456]
Hispanic × After Week 12, 2020	-3.945**	-0.873*	-0.00119	-3.088*
	[1.934]	[0.491]	[0.0767]	[1.757]
Non-Hisp. Black × After Week 12, 2020	0.982	-0.722*	0.421***	1.435
	[1.972]	[0.396]	[0.157]	[1.676]
Non-Hisp. Asian × After Week 12, 2020	5.151***	-0.618	-0.168	6.027***
	[1.516]	[0.503]	[0.245]	[1.522]
Non-Hisp. American Indian / Alaska Native × After Week 12, 2020	2.256	2.001**	0.152	0.0781
	[2.071]	[1.007]	[0.230]	[1.824]
Dependent variable mean	41.35	6.001	1.591	34.18
Number of race-by-week cells	420	420	420	420

Effect of COVID-19 on **Prime-Age Adult** Patients' Return Visits

	(1) Any Visit	(2) Preventive	(3) Vaccine	(4) Other
After Week 12, 2020	-15.48***	-2.100***	-0.233***	-13.18***
	[0.584]	[0.145]	[0.0176]	[0.462]
Hispanic	-3.894***	-0.799***	-0.116***	-2.997***
	[0.245]	[0.0490]	[0.00633]	[0.212]
Non-Hisp. Black	2.349***	0.271***	-0.124***	2.189***
	[0.216]	[0.0626]	[0.00564]	[0.177]
Non-Hisp. Asian	-6.631***	1.665***	0.277***	-8.530***
	[0.277]	[0.0556]	[0.0179]	[0.231]
Non-Hisp. American Indian/Alaska Native	6.812***	-0.908***	0.0997***	7.663***
	[0.386]	[0.0688]	[0.0125]	[0.373]
Hispanic × After Week 12, 2020	1.009	0.517***	0.0964***	0.413
	[0.981]	[0.196]	[0.0253]	[0.849]
Non-Hisp. Black × After Week 12, 2020	0.841	-0.287	0.112***	1.028
	[0.865]	[0.250]	[0.0226]	[0.708]
Non-Hisp. Asian × After Week 12, 2020	-6.962***	-2.029***	-0.215***	-4.743***
	[1.109]	[0.223]	[0.0715]	[0.923]
Non-Hisp. American Indian / Alaska Native × After Week 12, 2020	3.152**	0.887***	0.0127	2.270
	[1.542]	[0.275]	[0.0501]	[1.493]
Dependent variable mean	52.34	2.945	0.331	49.09
Number of race-by-week cells	420	420	420	420

Effect of COVID-19 on **Age 65+** Patients' Return Visits

	(1) Any Visit	(2) Preventive	(3) Vaccine	(4) Other
After Week 12, 2020	-39.19***	-2.395***	-0.328***	-36.49***
	[2.077]	[0.155]	[0.0189]	[1.951]
Hispanic	7.017***	0.0351	-0.0910***	7.048***
	[0.661]	[0.0741]	[0.00714]	[0.615]
Non-Hisp. Black	1.551**	-0.409***	-0.181***	2.116***
	[0.762]	[0.0711]	[0.00895]	[0.737]
Non-Hisp. Asian	12.26***	2.609***	0.696***	9.003***
	[0.807]	[0.179]	[0.0295]	[0.711]
Non-Hisp. American Indian/Alaska Native	11.06***	-2.109***	-0.408***	13.54***
	[1.988]	[0.108]	[0.0312]	[1.904]
Hispanic × After Week 12, 2020	-4.781*	0.236	0.102***	-5.100**
	[2.646]	[0.296]	[0.0286]	[2.462]
Non-Hisp. Black × After Week 12, 2020	6.914**	0.0413	0.176***	6.718**
	[3.047]	[0.285]	[0.0358]	[2.947]
Non-Hisp. Asian × After Week 12, 2020	-19.26***	-2.247***	-0.669***	-16.42***
	[3.228]	[0.718]	[0.118]	[2.844]
Non-Hisp. American Indian / Alaska Native × After Week 12, 2020	14.20*	0.691	0.358***	13.18*
	[7.950]	[0.434]	[0.125]	[7.615]
Dependent variable mean	103.9	4.150	0.512	99.27
Number of race-by-week cells	420	420	420	420

Summary

- Primary care visits fall substantially in week of March 16, 2020, and do not rebound by week of May 18, 2020. But the magnitude of the reduction is different across different racial groups:
  - Non-Hispanic white: $\downarrow$ 23.1 per 1,000 patients
  - Non-Hispanic Black: $\downarrow$ 18.9 per 1,000 patients
  - Non-Hispanic Asian: $\downarrow$ 30.3 per 1,000 patients
  - Non-Hispanic American Indian: $\downarrow$ 16.5 per 1,000 patients
  - Hispanic: not statistically different from non-Hispanic whites
- When aggregating across age groups: Black/white and American-Indian/white disparities are reduced, while Asian/white disparity is widened
  - **Reduction** in disparities is driven by non-preventive visits; **widening** is driven by both preventive and non-preventive visits

Summary con't

- Magnitude of the reduction in primary care visits (in relative terms) is biggest for children
  - More than 50% drop in visits (preventive, vaccine-related, and others)
  - Black/white disparity in vaccine-related visits falls, but widens for other preventive visits
  - Relatively smaller reduction for Asian children (driven by non-preventive/vaccine-related)
  - Relatively bigger reduction for Hispanic children (driven by both preventive and non-preventive visits)
  - Relatively smaller reduction for American Indian children (driven by preventive visits)
- For those aged 65+:
  - In baseline years, non-white patients have higher rates of non-preventive/vaccine visits; they fall by more for Hispanic and Asian patients, by less for Black and American Indian patients
  - Relative to non-Hispanic white patients, vaccine-related visits fall by less for Hispanic, Black, and American Indian patients; by more for Asian patients

Discussion and Next Steps

- The COVID-19 pandemic presented a huge disruption to the delivery of primary care, but the impacts were not equally distributed across racial and ethnic groups, or across patients of different ages
- Are these impacts driven by entire practices shutting down? No. Results similar if we restrict to practices that still existed in week 15, 2020.
- Are the differential impacts driven by differences in underlying chronic conditions?
  - To do: account for chronic conditions
- What about differential responses to state/local regulations?
  - To do: merge in information about regulations to analyze differential impacts across groups