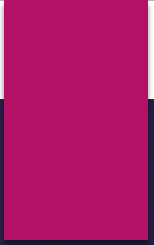




20
21

NCSCG 6TH ANNUAL **VIRTUAL** LIVER SYMPOSIUM

January 7-28, 2021



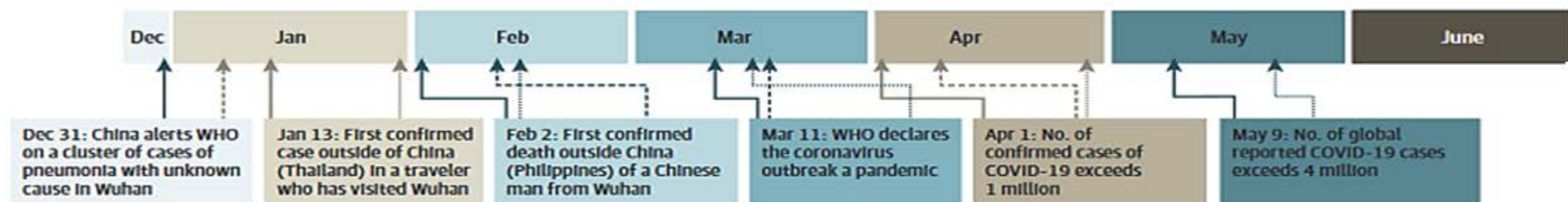
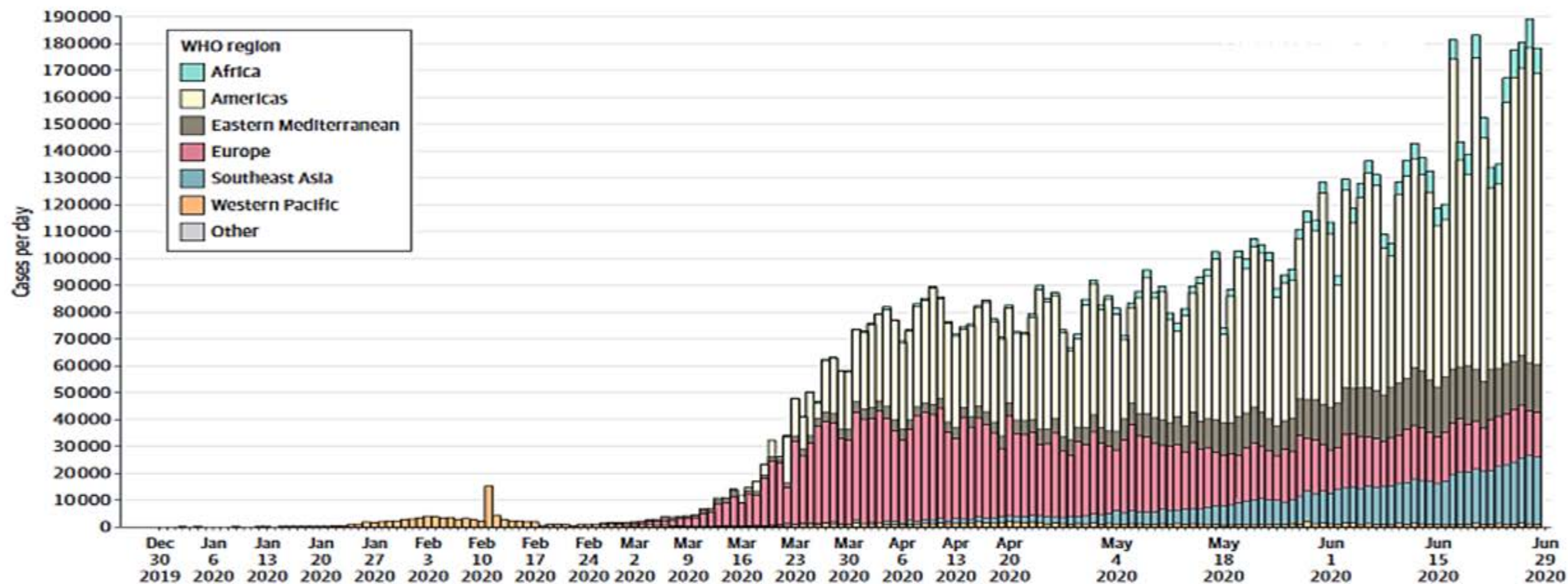
Practicing Hepatology during a pandemic: What health care disparities are made worse/ highlighted by COVID?

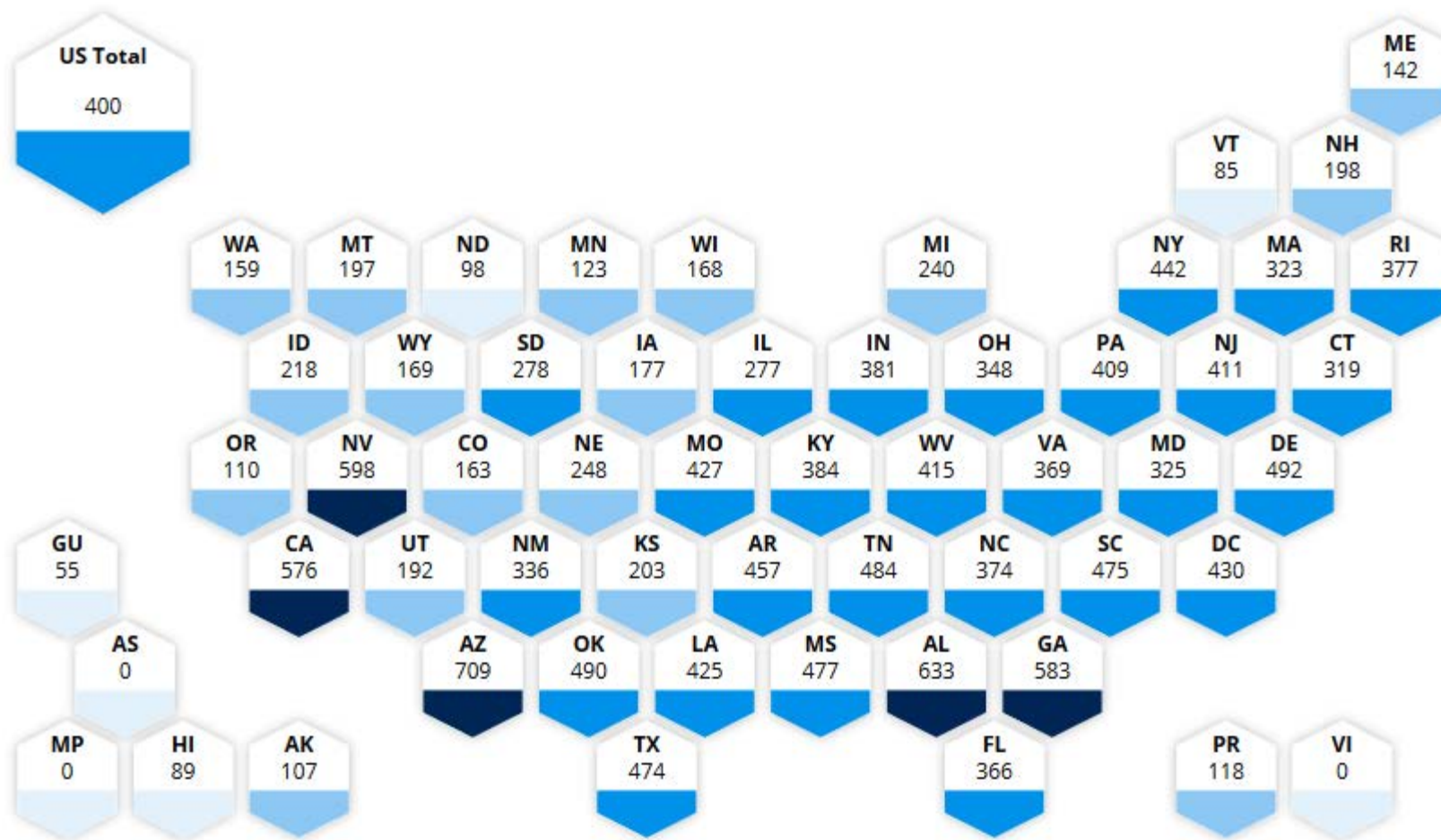
JULIUS WILDER

“

Social Determinants of Disparities in COVID-19

”





US Total

270,089,586

Total test results

22,324,541

Cases

129,748

Currently hospitalized

367,393

Deaths

NATIONWIDE COVID-19 METRICS. 7-DAY AVERAGE LINES

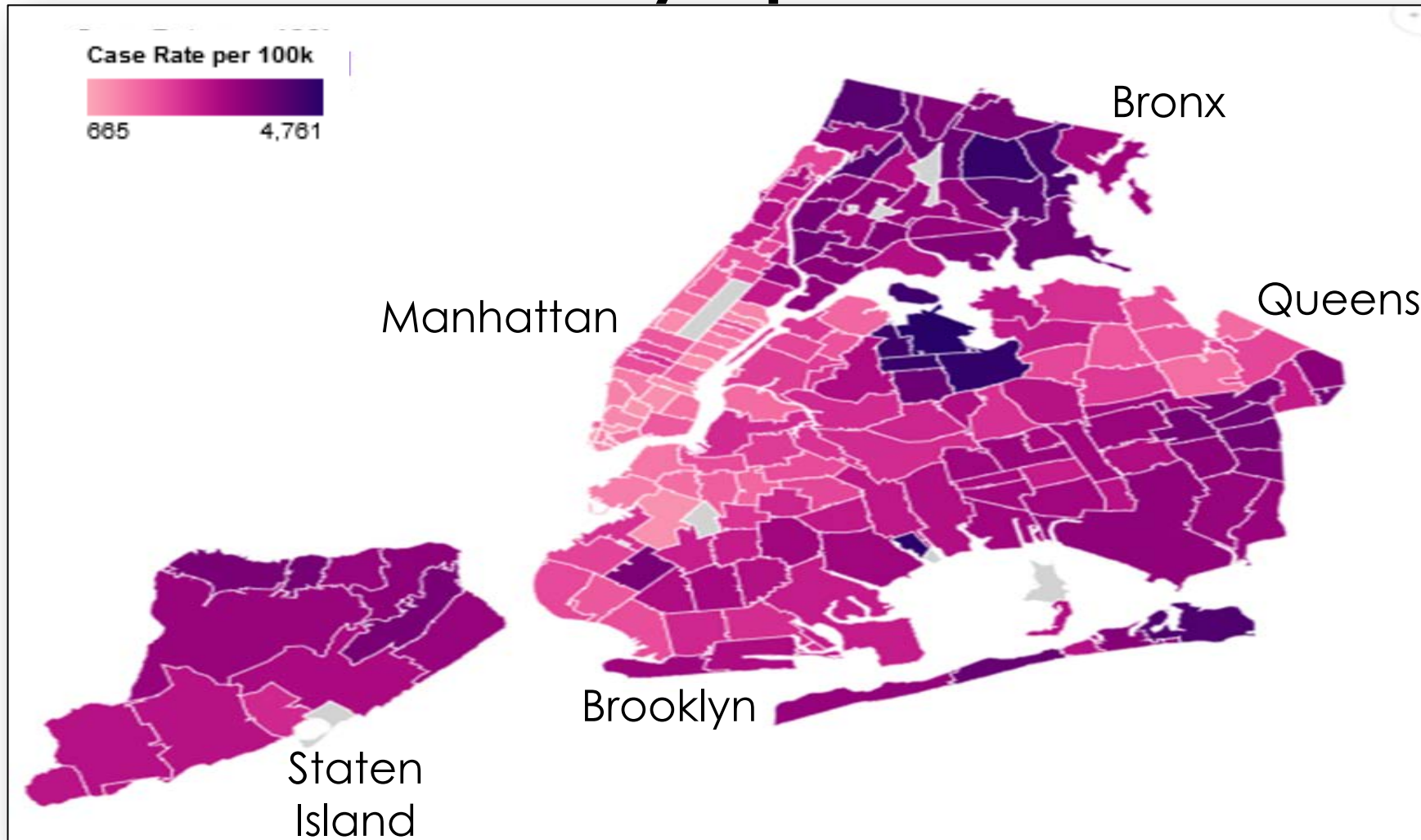
Apr 1 - Jan 11



Source: The COVID Tracking Project

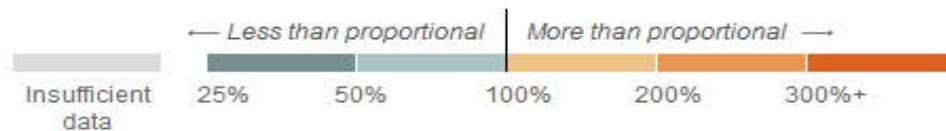
● Single-day record

COVID19 Case Rate by Zip Code, New York City



African Americans Cases And Deaths Are Disproportionate To Their Population Size In Most States

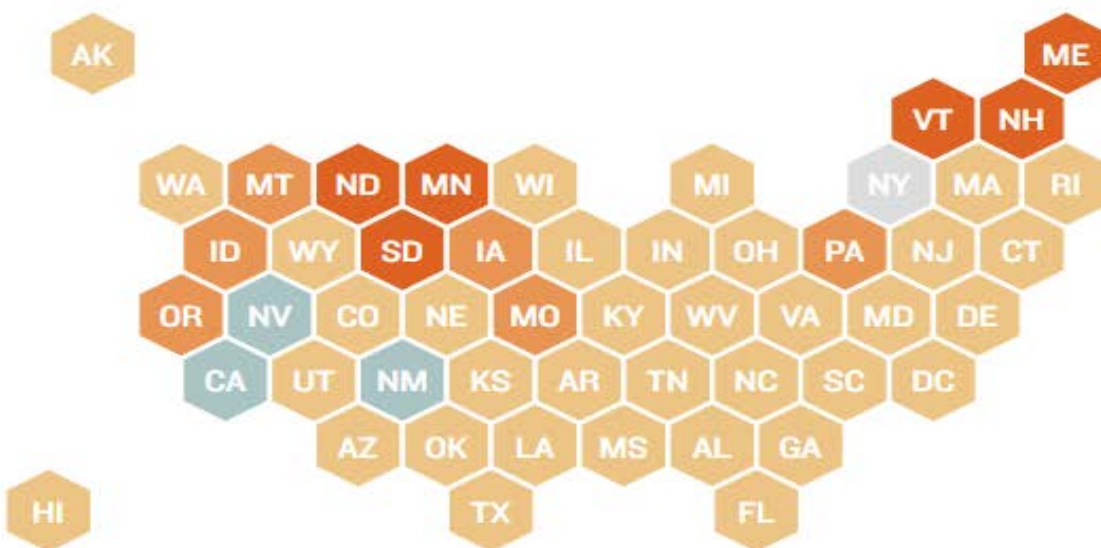
PERCENTAGE DIFFERENCE IN SHARE OF DEATHS/CASES, COMPARED WITH AFRICAN AMERICANS' SHARE OF THE POPULATION



DEATHS

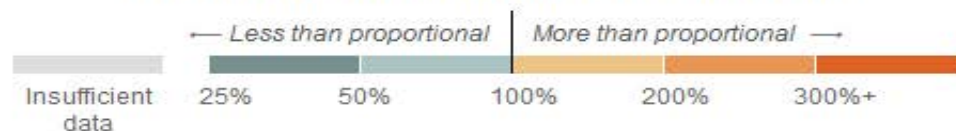


CASES



Hispanics And Latinos Infection Rates Are Disproportionate In Most States

PERCENTAGE DIFFERENCE IN SHARE OF DEATHS/CASES, COMPARED WITH
HISPANIC AND LATINO SHARE OF THE POPULATION



DEATHS



CASES



1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

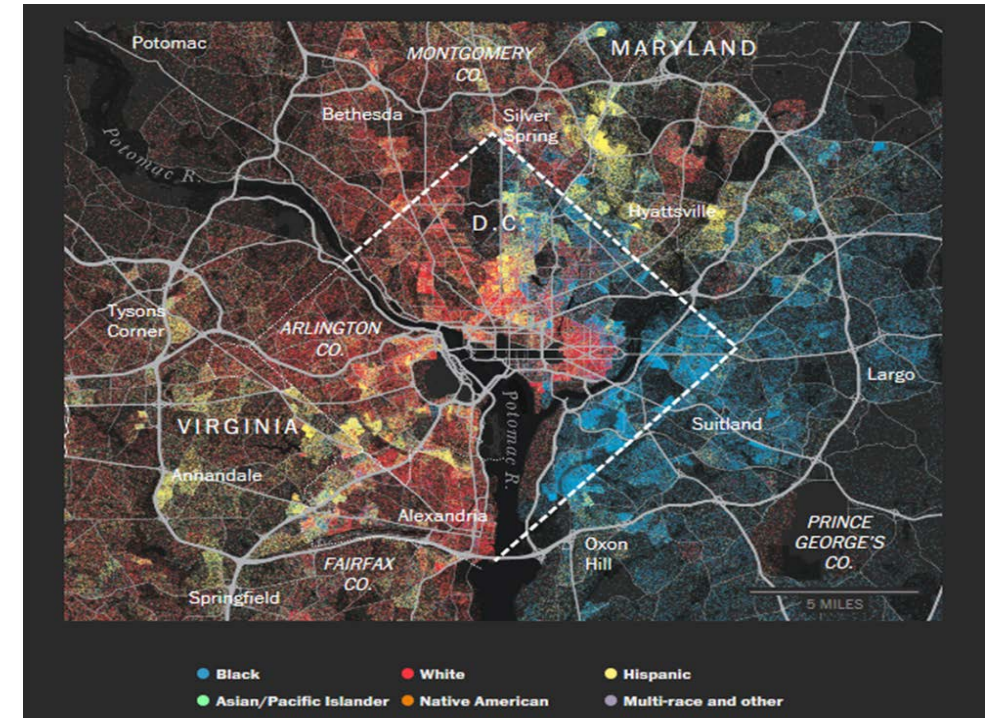
← Less than proportional | More than proportional →

Insufficient data 25% 50% 100% 200% 300%+



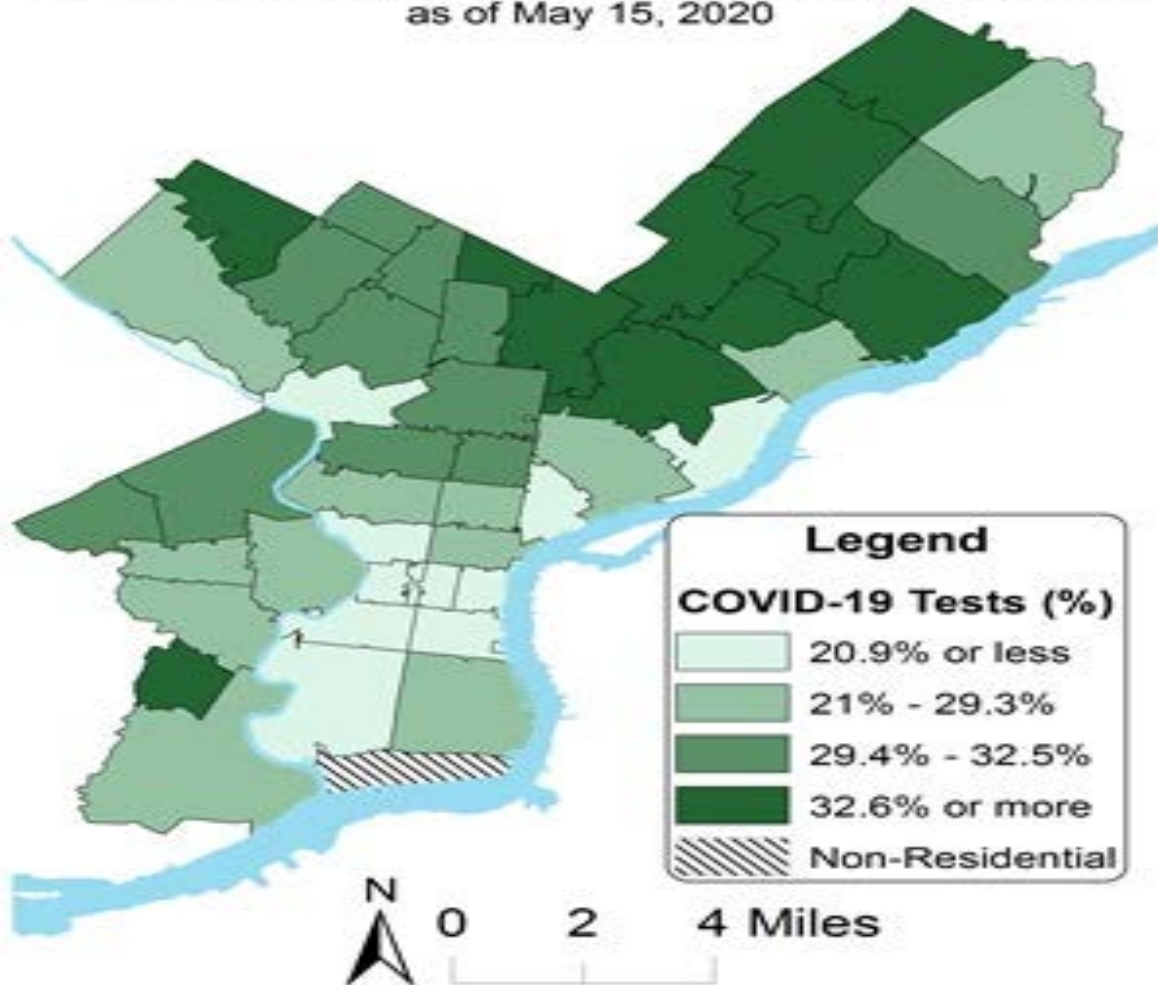
Neighborhood, susceptibility, and COVID-19

- ▶ Black or Latino neighborhoods
 - ▶ Higher density areas which makes social distancing more difficult
 - ▶ Hospitals have fewer technological resources, specialists, and board-certified physicians, and higher rates of negligent adverse events and mortality (Smedley et al. 2003)

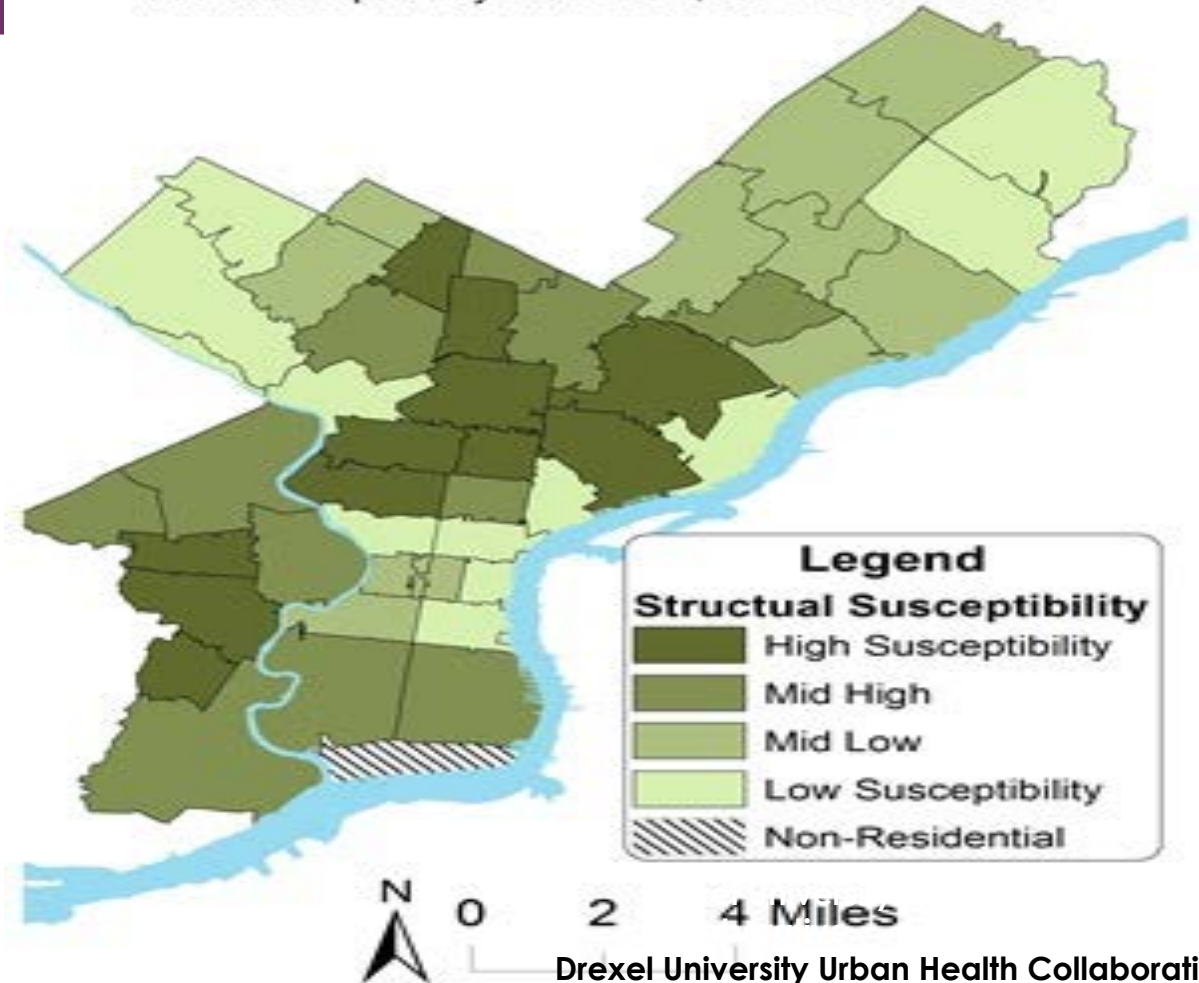


Neighborhood, susceptibility, and COVID-19

Positive COVID-19 Tests per ZIP Code in Philadelphia, PA
as of May 15, 2020



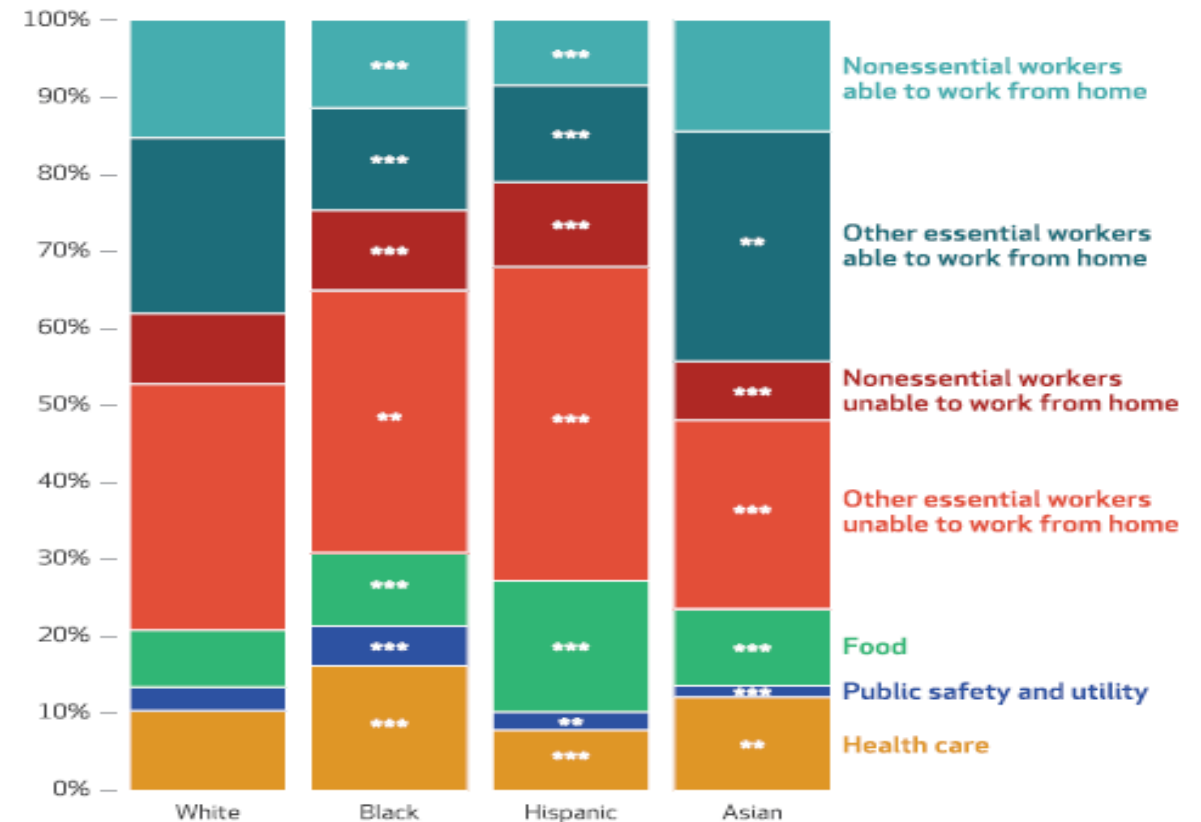
Structural Susceptibility to COVID-19
in Philadelphia by ZIP Code, ACS 2014-2018



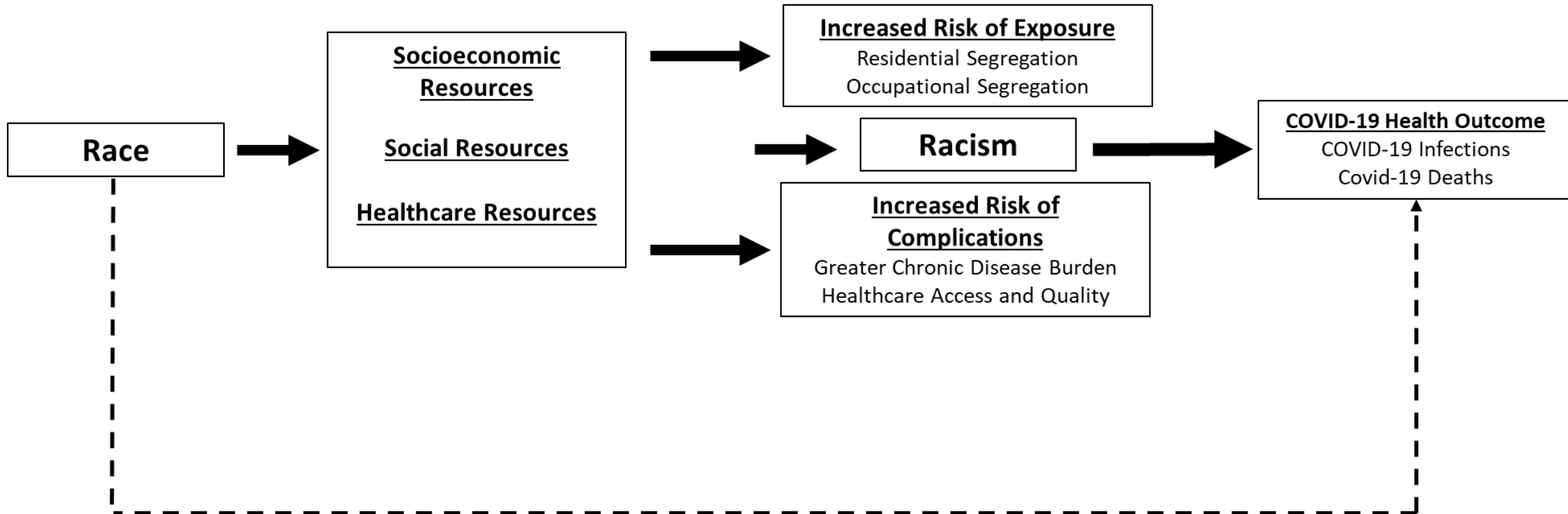
Occupational Segregation

- ▶ Black and Hisp/Latino both represent approximately 25% of service industry workers, and 16% of production and transportations workers compared to 16% and 11% for Whites, respectively (U.S. Bureau of Labor Statistics, 2019)

Job characteristics among US workers, by race and ethnicity, 2014-17

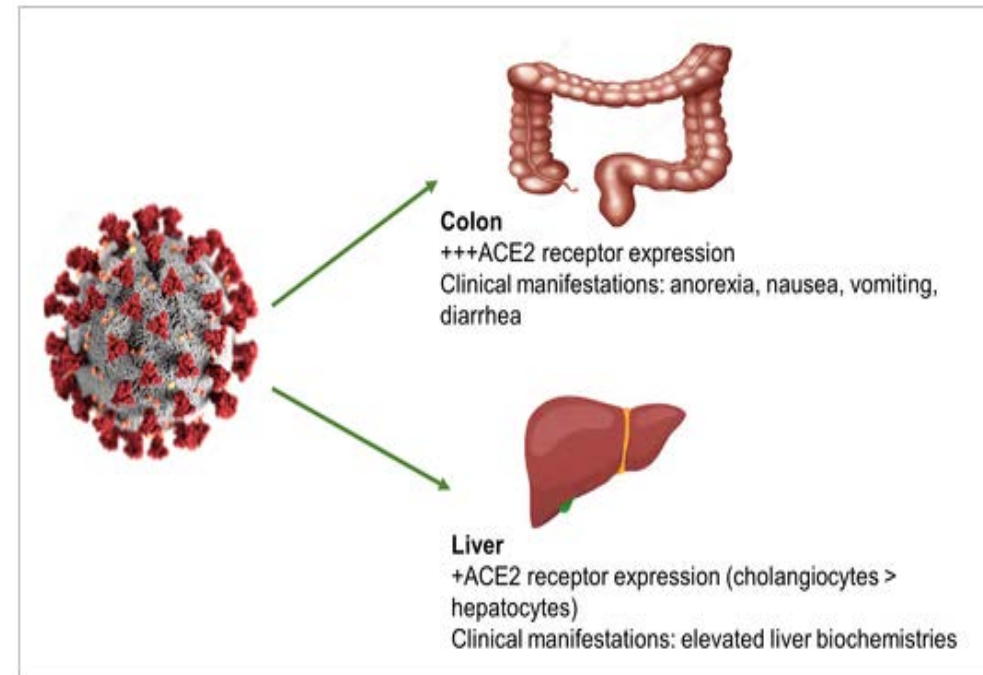


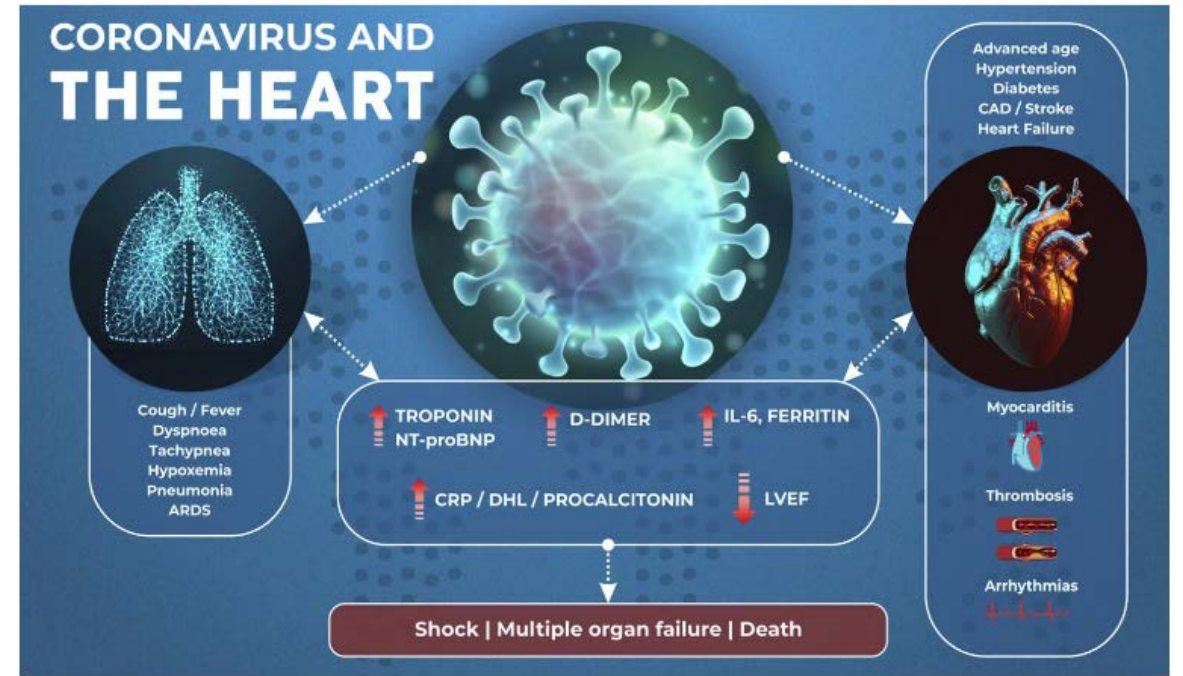
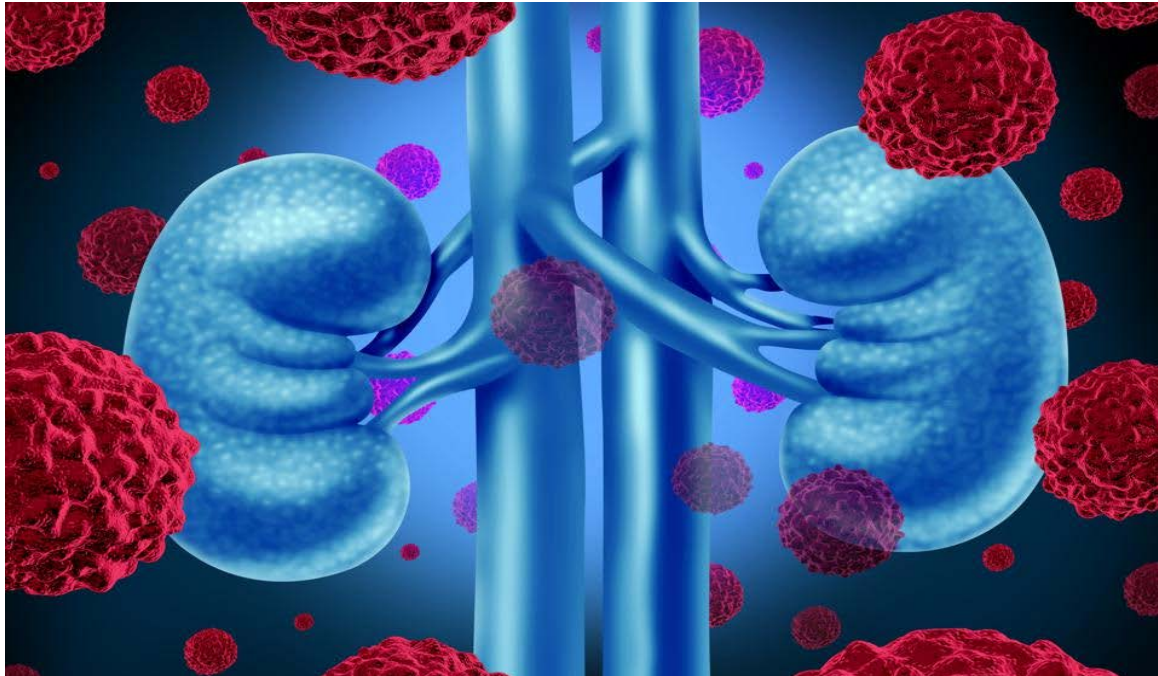
Race As A Fundamental Cause of COVID-19 Outcomes



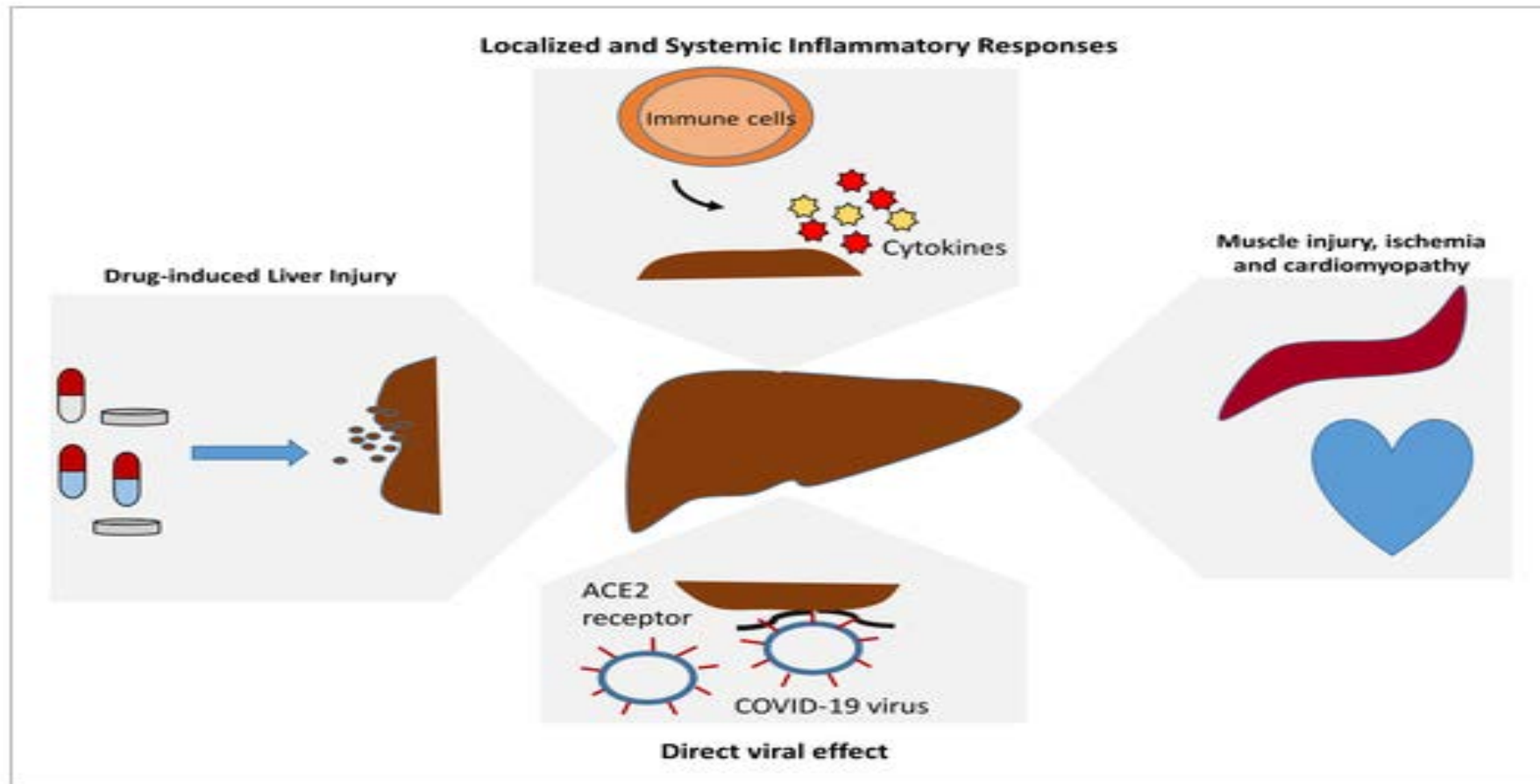
COVID-19 and the Liver

- ▶ Increased liver enzymes
 - ▶ AST+ALT
 - ▶ Associated with worse outcomes
- ▶ Inpatients with cirrhosis and COVID-19 had higher mortality risk than inpatients with COVID-19 infection alone.
- ▶ GI: Anorexia, nausea, vomiting, and diarrhea

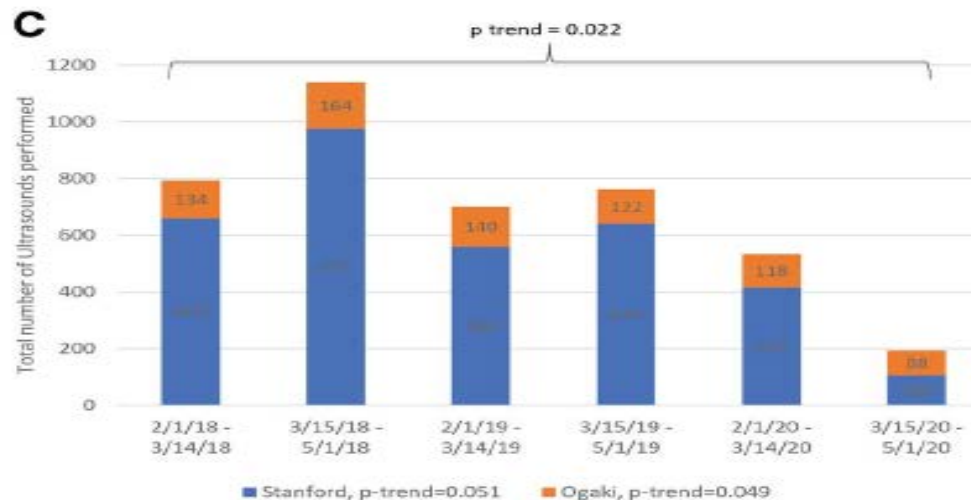
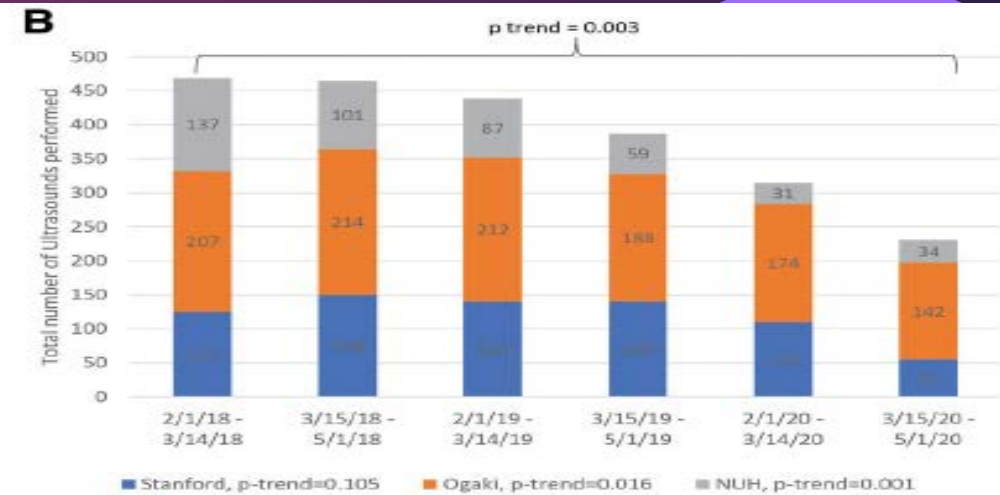
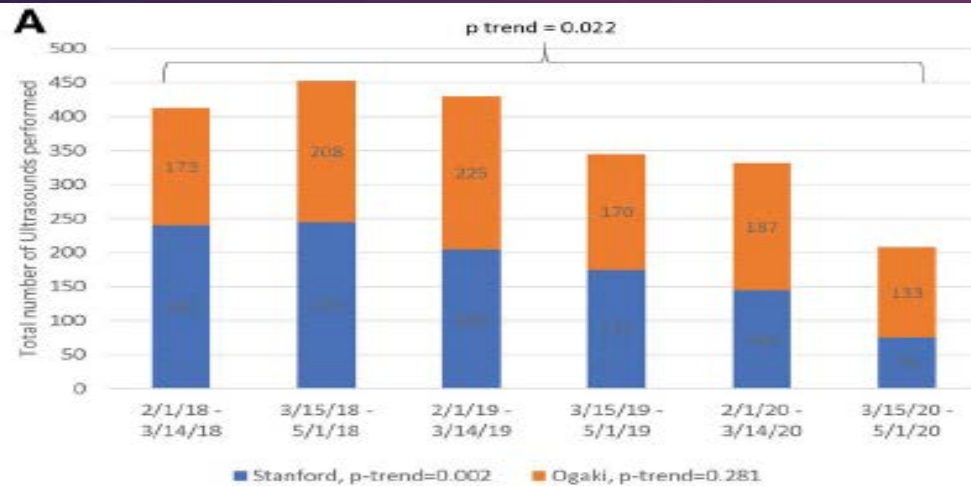




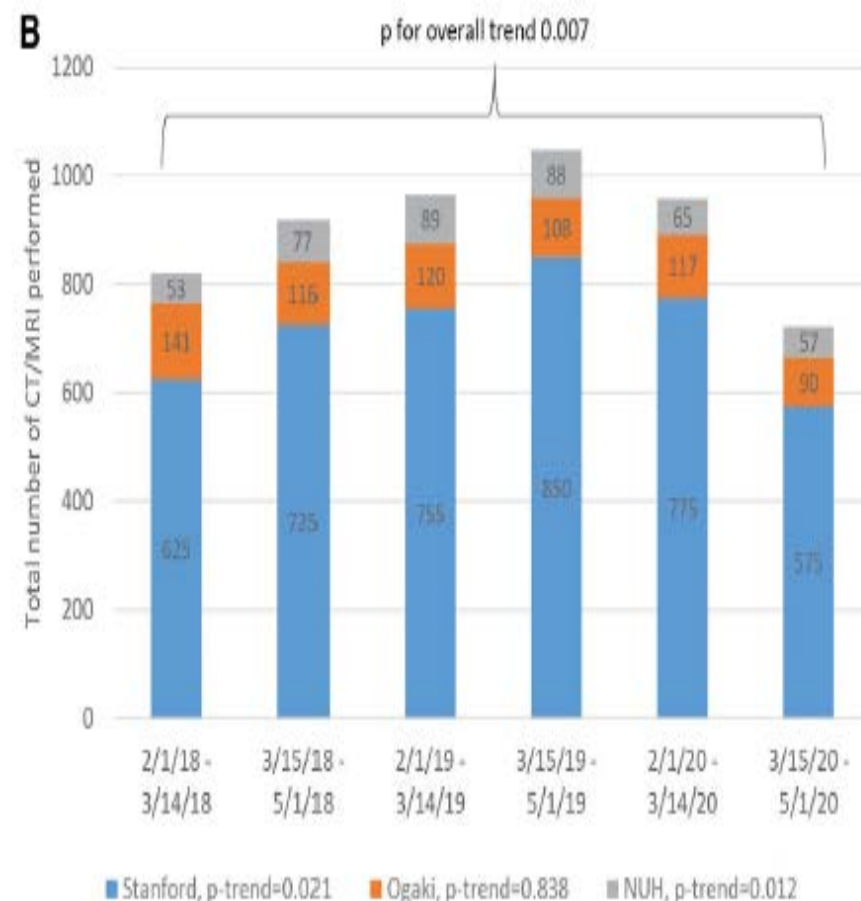
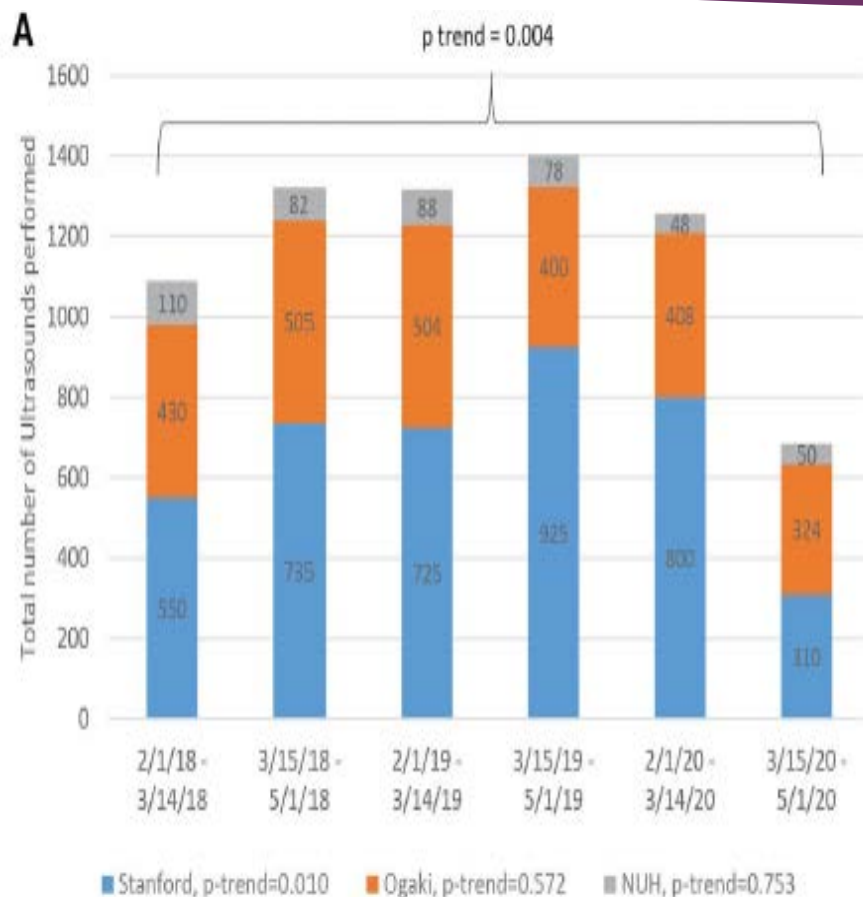
Localized and Systemic Inflammatory Responses



Trends in total number of liver clinic visits



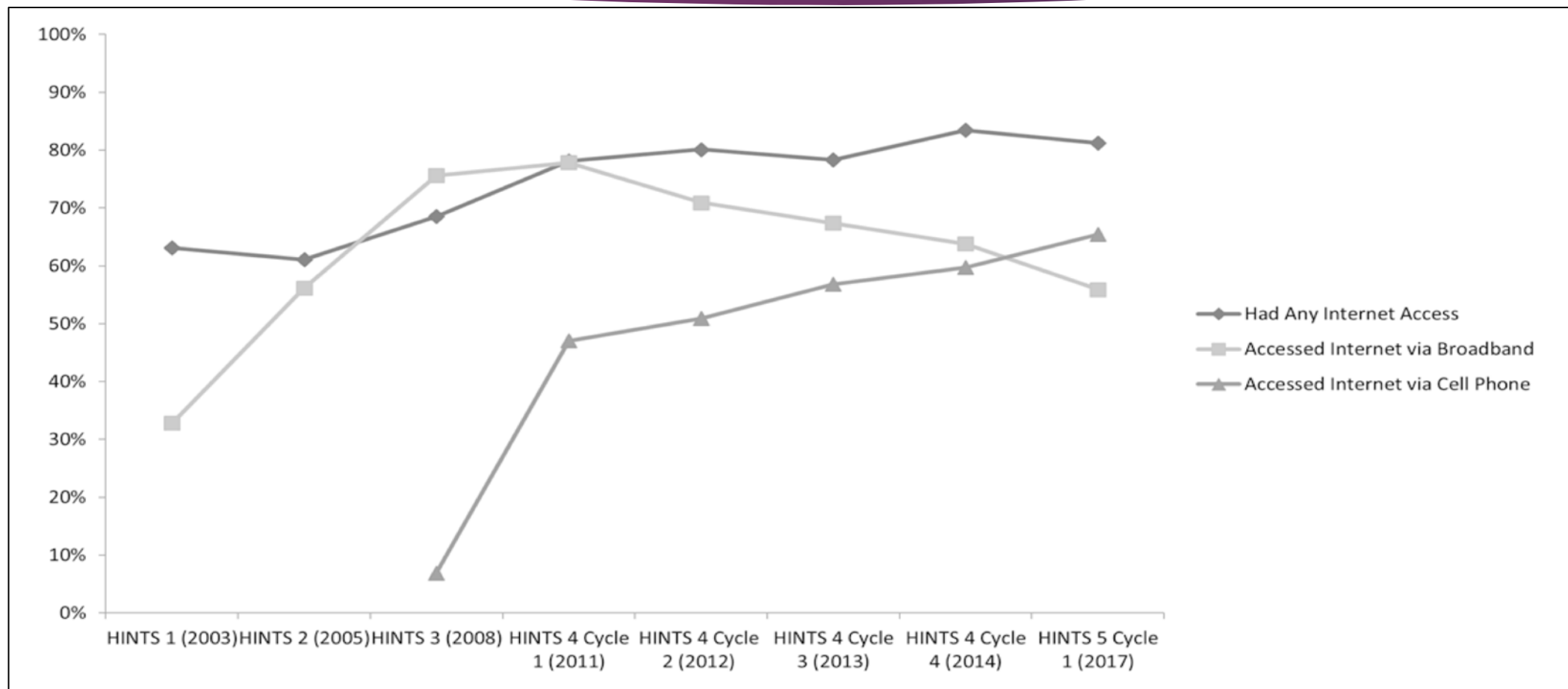
Trends in the number of abdominal ultrasounds performed and number of CT/MRI performed over time.



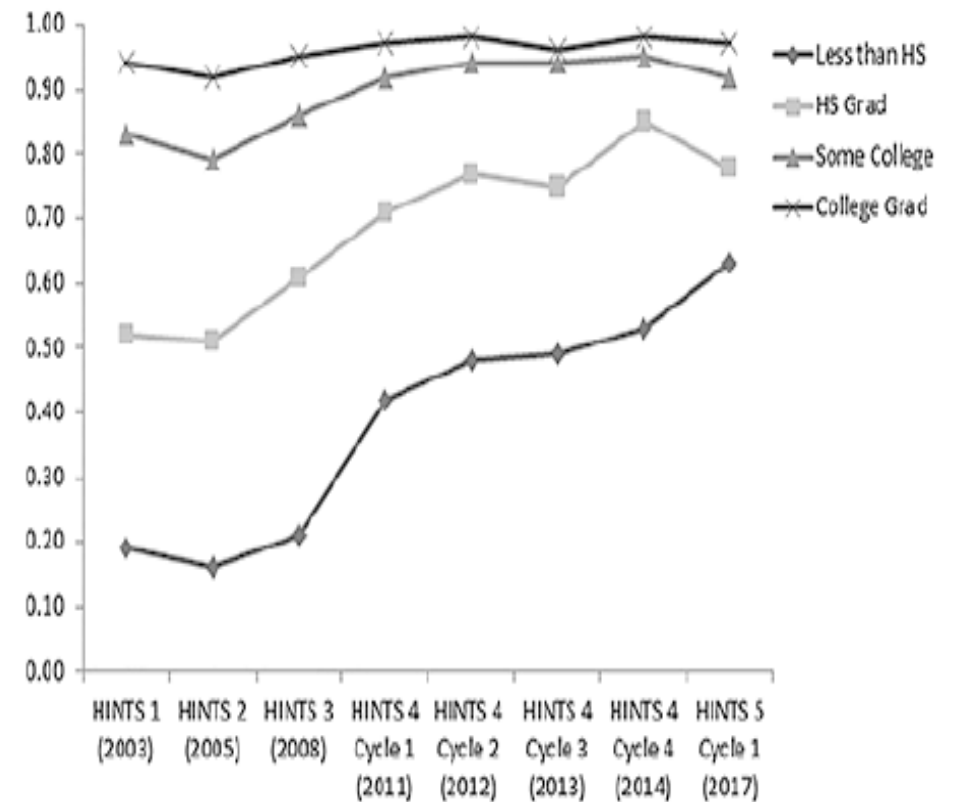
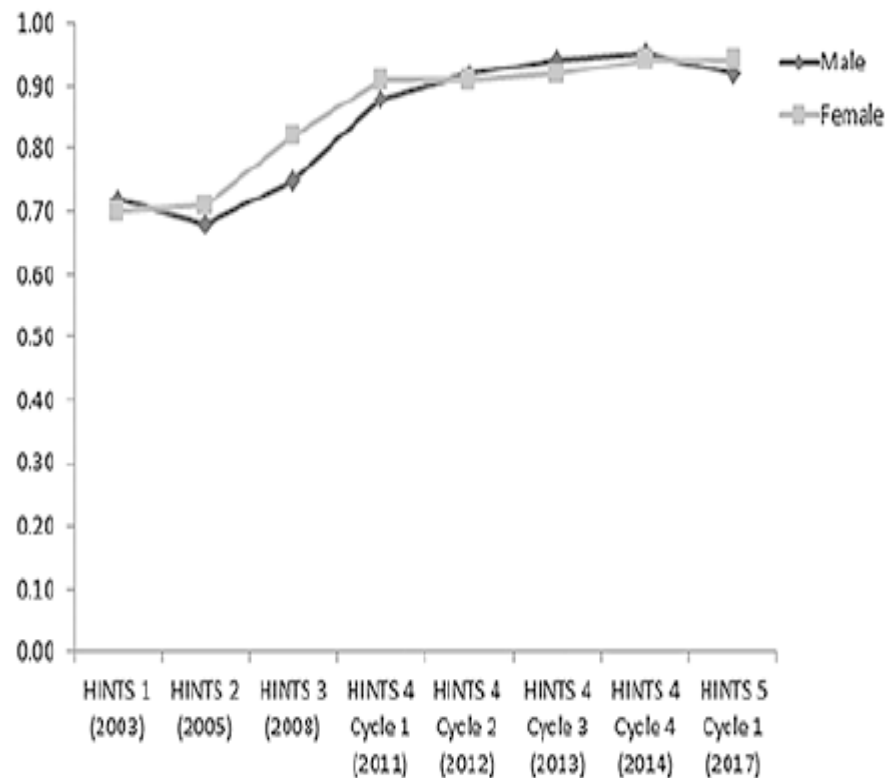
Telemedicine

- ▶ Telemedicine can be a valuable tool during a pandemic and more broadly to provide hepatology care to our patients.
- ▶ But challenges remain due to a lack of equity in internet and broadband services
 - ▶ 80% of households have internet access, but disparities exist
 - ▶ Even among those with access, the quality of the internet is quite variable
 - ▶ Ensure that patients receive information ahead of time on telemedicine use so they are prepared
 - ▶ Have IT available to provide help if there are connectivity issues
 - ▶ Ensure patients are prepared to use their phones as back up

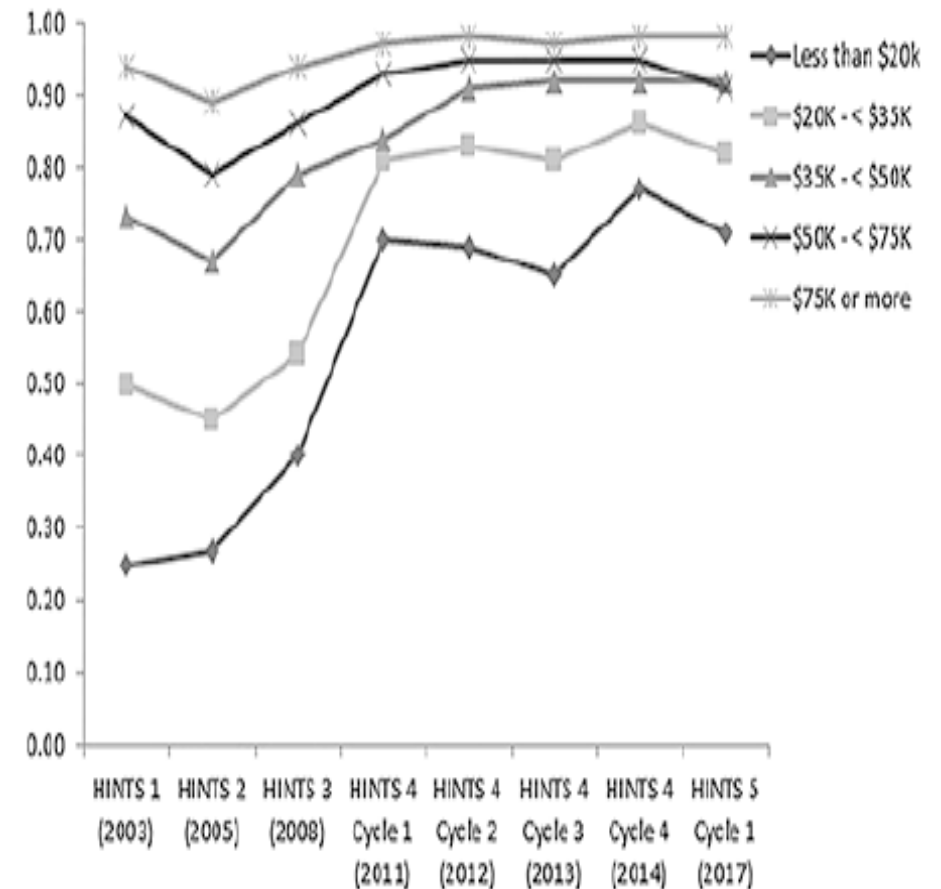
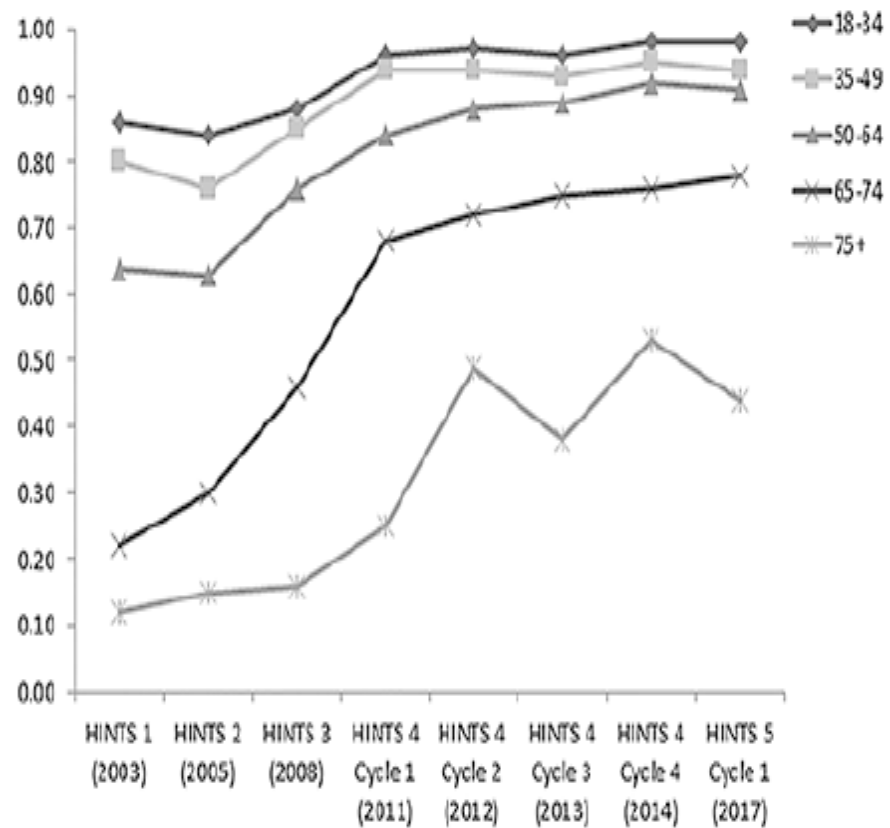
Telemedicine Access



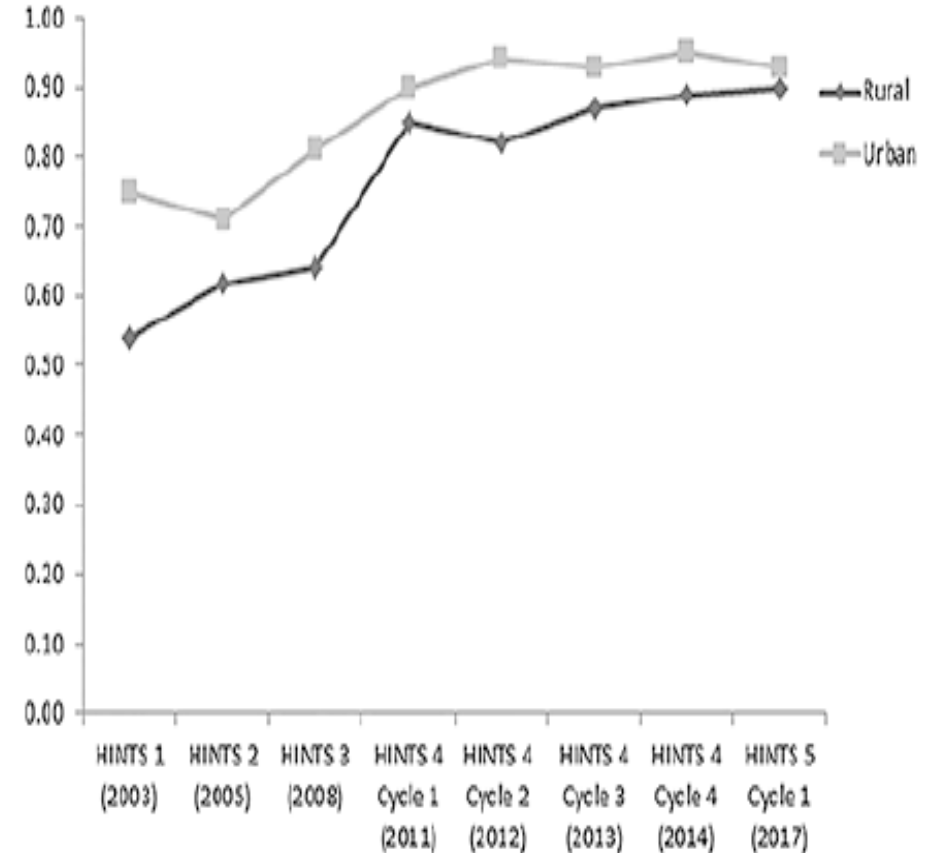
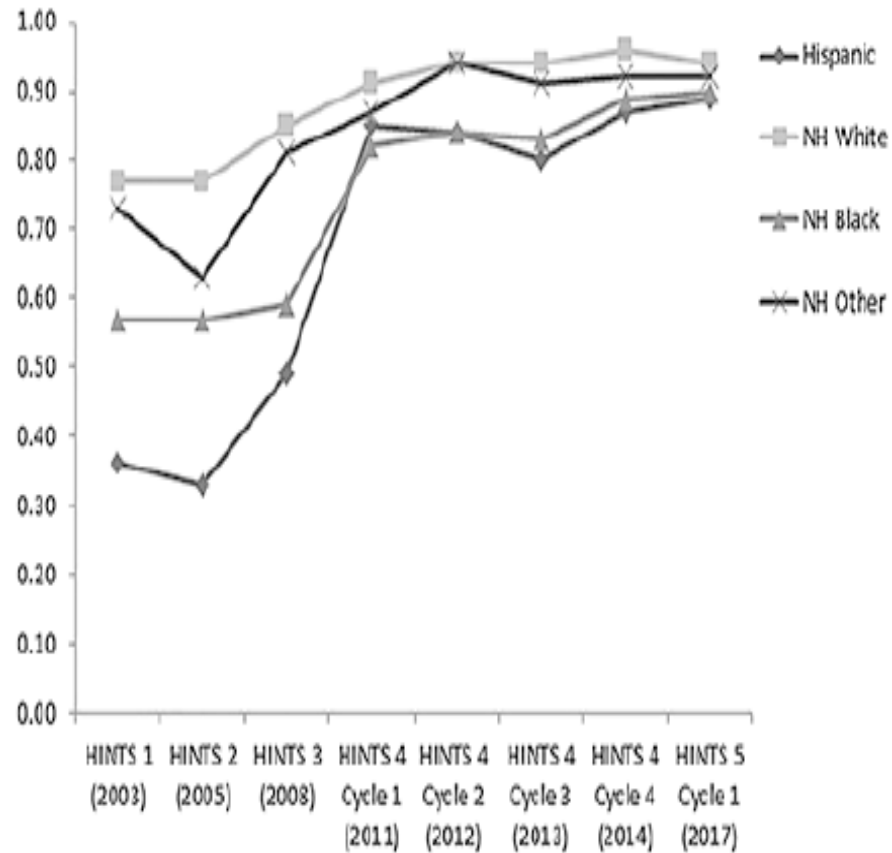
Internet Access by Sex and Education



Internet Access by Age and Income



Internet Access by Race/Ethnicity and Geography



Disparities Exist in Liver Disease at Baseline

- ▶ Chronic liver disease disproportionately impacts racial/ethnic minorities, low-income communities, and non- U.S. born groups, and SDOH contribute to adverse liver-related outcomes in these communities
 - ▶ Mechanisms driving these disparities are shared with COVID-19

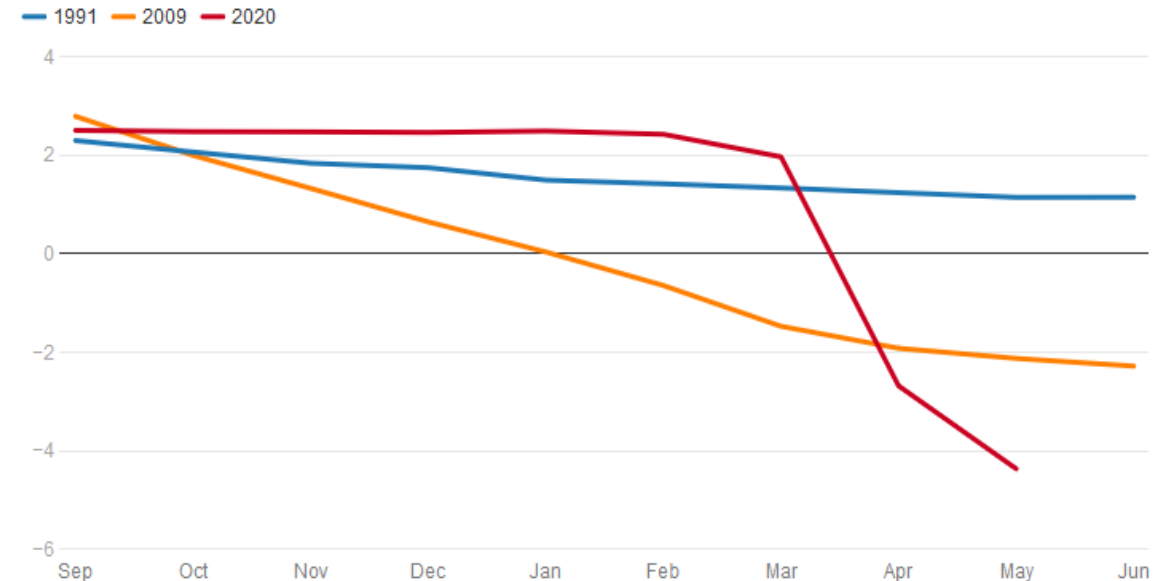


SES: The Virus and The Quarantine

- ▶ Black median household income is three-fifths that of whites
- ▶ Black family wealth is less than one-sixth that of whites
- ▶ Older White households have an average net worth of \$258K, the averages for older Black and Latinx households are only \$13k and \$39k, respectively
 - ▶ Explains why Blacks and Latinx are more likely to live in crowded, multi-generational households than Whites

The COVID-19 recession has seen the fastest, steepest downgrades in consensus growth projections among all global recessions since 1990

Consensus forecasts of global GDP (percent)



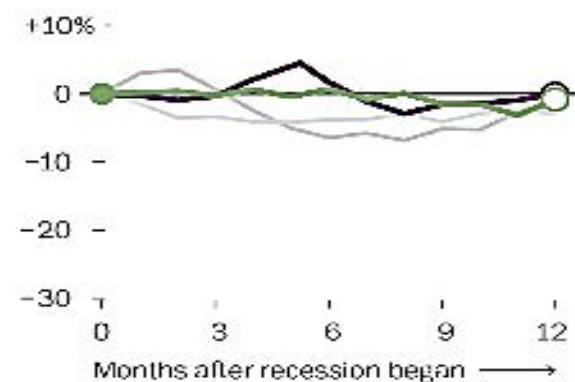
September to December shows forecasts made in the previous year, while January to June shows data for the current year. Data for 1991 are for advanced economies only due to data availability.

Source: Consensus Economics, World Bank • [Embed this chart](#) • [Download Image](#)

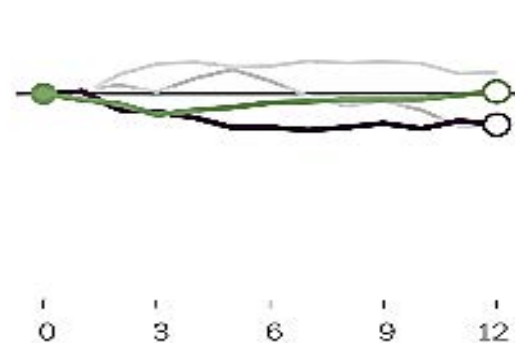
The coronavirus crisis is different

Job growth (or loss) since each recession began, based on weekly earnings

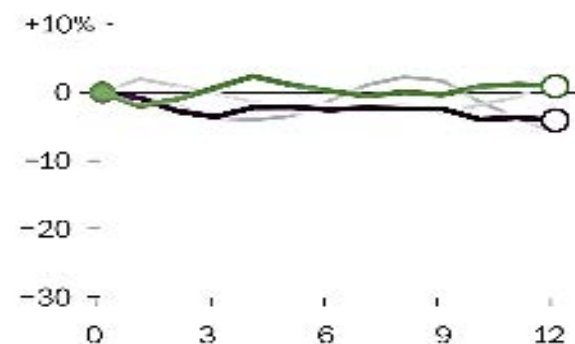
1990 recession



2001 recession



2008 recession



Coronavirus crisis



Notes: Based on a three-month average to show the trend in volatile data.

Source: Labor Department via IPUMS, with methodology assistance from Ernie Tedeschi of Evercore ISI

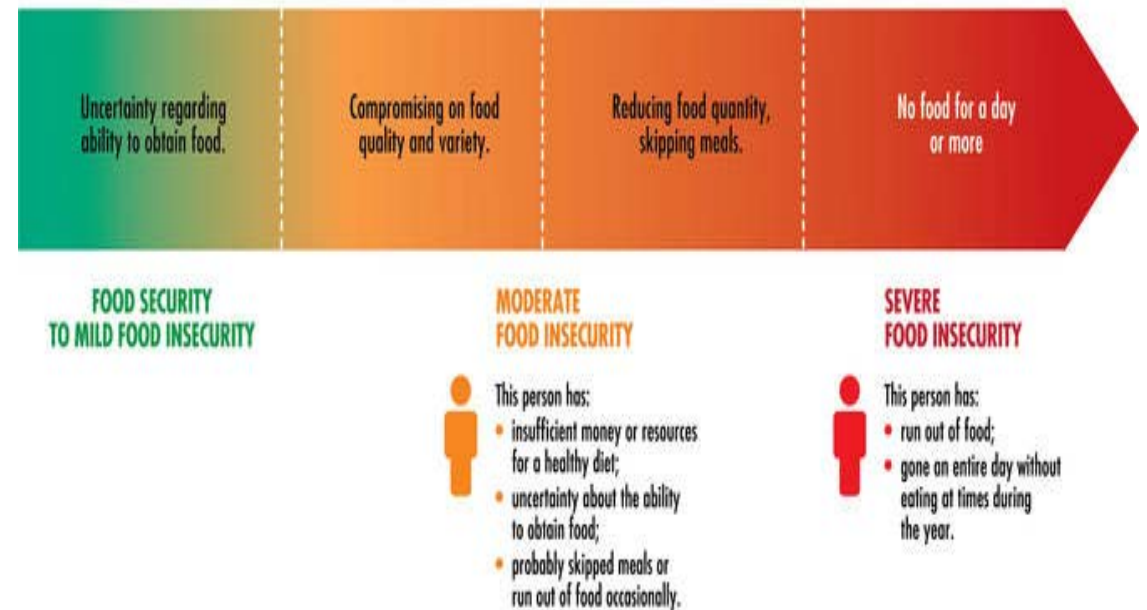
THE WASHINGTON POST



SES, COVID, and Liver Disease

- ▶ Hispanics in the U.S. have the greatest prevalence of nonalcoholic fatty liver disease (NAFLD), which can lead to cirrhosis and its complications, including hepatocellular carcinoma (HCC).
 - ▶ Food insecurity and poorer food quality are independent risk factors for NAFLD among low-income U.S. adults
 - ▶ Many patients with chronic liver disease are unwilling or unable to safely access grocery stores
 - ▶ Less access to affordable healthy foods
 - ▶ Concern for increased salt intake
 - ▶ Decompensation

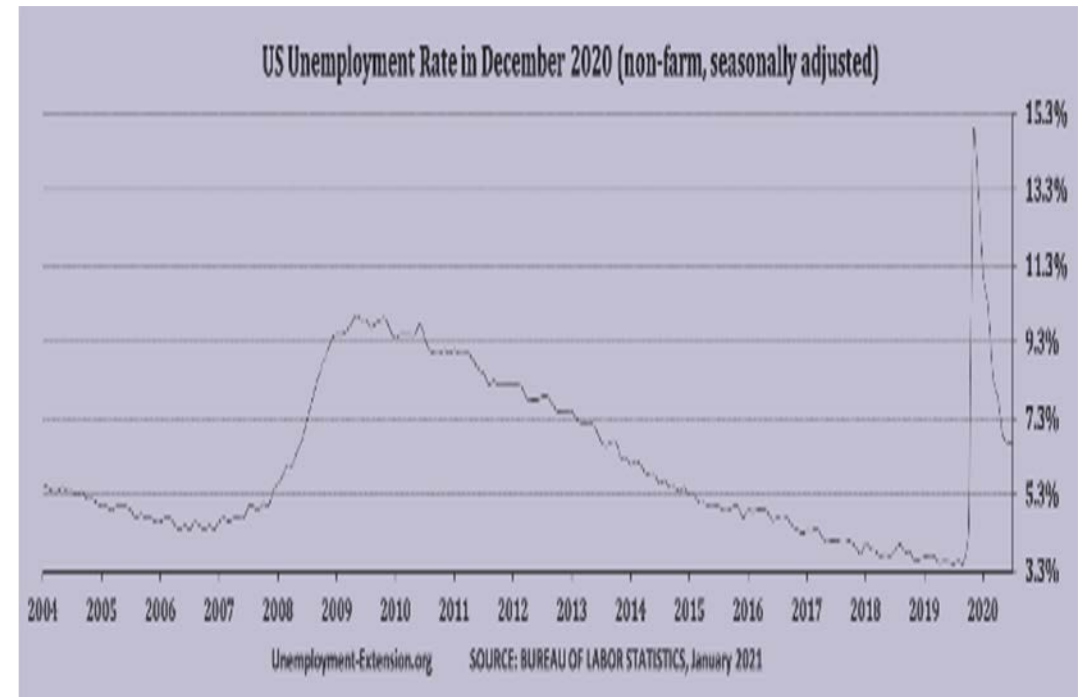
FOOD INSECURITY BASED ON THE FIES: WHAT DOES IT MEAN?



1. Rich et al. *Clin. Gastroenterol. Hepatol.* 2018;16:198-210
2. CDC 2020. People who are at higher risk for severe illness.
3. **Kardashian et al. *Hepatology*, 2020, Nov 4 doi: 10.1002/hep.31605. Online ahead of print.**

SES, COVID, and Liver Disease

- ▶ Unprecedented job losses
 - ▶ Worst global recession in history
 - ▶ Link between employment insurance status
 - ▶ Expensive medications (Rifaximin)
 - ▶ Procedures (imaging, copays)
 - ▶ Likely to experience worsening symptom management and increased hospitalizations



1. Kaiser Family Foundation. Poverty Rate by Race/Ethnicity. 2018
2. Bass et al. *N. Engl. J. Med.* 2010;362:1071–1081.

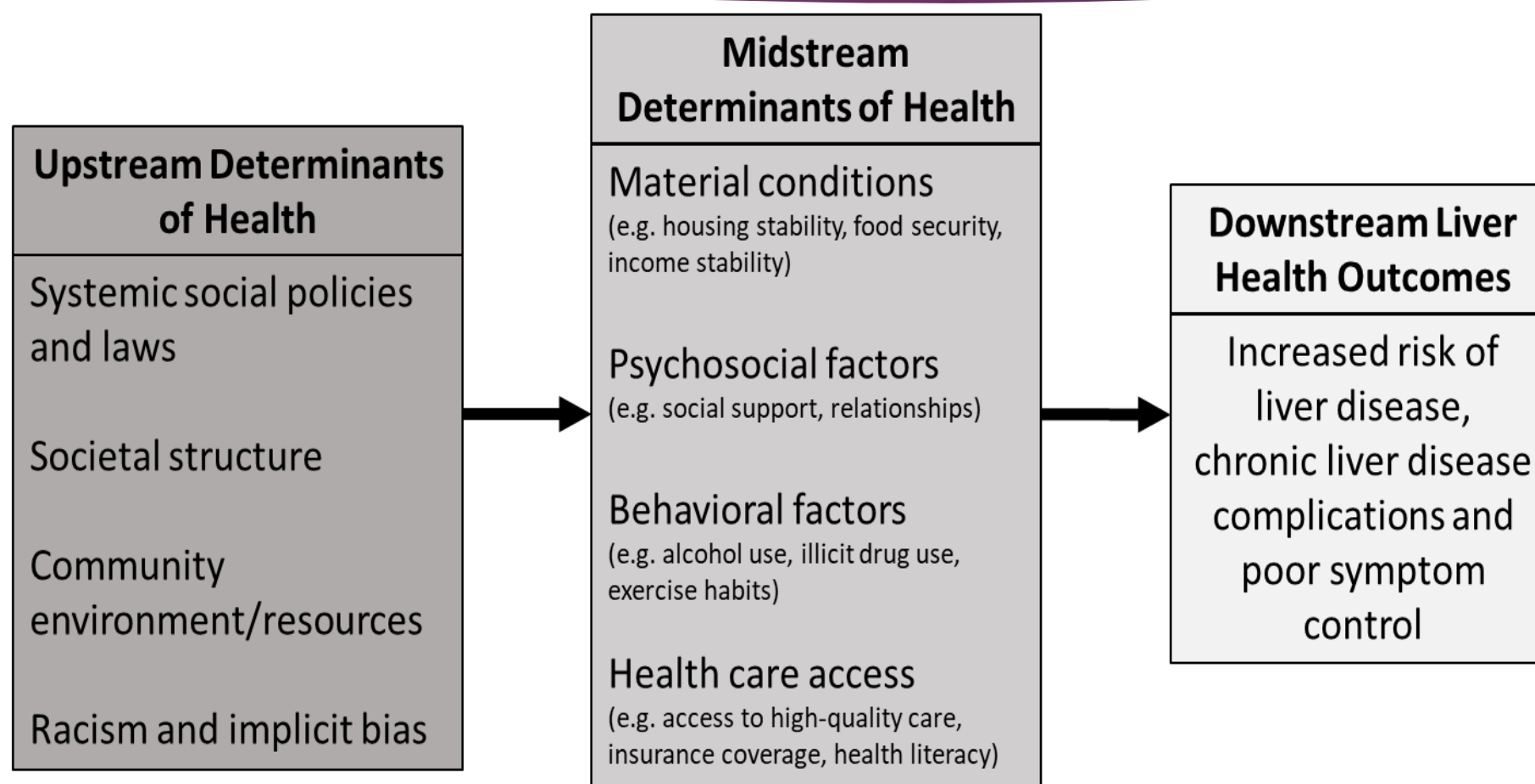
Impact of Quarantine on Liver Disease

- ▶ Decreased social networks and interpersonal relationships
 - ▶ Individuals may face more limited access to caregiver support
 - ▶ Limited community assistance programs
 - ▶ Greater difficulties with medication adherence or transportation
- ▶ Alcohol use disorder is highly prevalent among Native Americans, who suffer from the highest rates of mortality from alcohol-associated liver disease.
 - ▶ We have seen increase in ETOH use with social isolation and increased stress from quarantine



1. Panchal et al. *Kaiser Family Foundation*. 2020
2. Retail Analytics, Nielsen. July 10, 2020.
3. Hoffman et al. Millions Struggle to Stay Sober On Their Own. *NYT*. July 2020.

Conceptual framework for the contribution of social determinants of health to health inequities, adapted to liver disease.



Recommendations

- ▶ Screen patients for social determinants of health
 - ▶ Help identify potential social risk factors and provide guidance
 - ▶ Coping strategies, referral to community covid programs (unemployment services/stimulus guidance)
- ▶ Engage community partners (food banks, transportation programs)
- ▶ Encourage telehealth and virtual AA meetings when able
 - ▶ If high risk for relapse (socially isolated), ensure mental health provider is aware and consider outreach program through clinic
 - ▶ Interdisciplinary integrated addiction medicine services

Recommendations

- ▶ Prioritize those at greatest risk for imaging studies for HCC surveillance
 - ▶ Consider blood-based biomarkers if US not possible
- ▶ Be a advocate for addressing SDOH including policy at the local, regional, and national level
- ▶ Antiracism and Bias training for faculty, staff, and trainees