

# DIFFERENCES IN HEALTHCARE RESOURCE UTILIZATION AND COSTS BY RACE/ETHNICITY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE: RESULTS FROM THE NATIONAL HEALTH AND WELLNESS SURVEY

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## INTRODUCTION

- Patients with Crohn's disease (CD) and ulcerative colitis (UC) have high rates of healthcare resource utilization (HCRU), including hospitalizations, surgery to manage their complications, and high medical costs.<sup>1-4</sup>
- Racial and ethnic disparities are evident in HCRU. Although overall healthcare spending is higher in White individuals than in other racial/ethnic groups, Black, Indigenous, and People of Color (BIPOC) individuals with chronic conditions have higher rates of emergency room (ER) visits and hospitalizations.<sup>5,6</sup>
- Studies assessing HCRU among patients with inflammatory bowel disease (IBD) across different racial/ethnic groups remain limited.
- The objective was to evaluate the relationship of race/ethnicity with HCRU, direct costs, and costs associated with work productivity impairment in White, Black, and Hispanic participants with IBD.

## METHODS

- This study included data from the 2018, 2019, and 2020 US National Health and Wellness Survey (NHWS), a self-administered, internet-based questionnaire collected from a nationwide sample of adults in the general population that includes approximately 75,000 participants per year.<sup>7</sup>
- Inclusion criteria were as follows:
  - ≥18 years of age and a US resident at the time of study
  - Self-reported Hispanic ethnicity or White or Black race and self-reported previous diagnosis of CD or UC
  - Valid Patient Activation Measure score
- HCRU included the total number of healthcare provider (HCP), gastroenterologist (GE), ER visits, and hospitalizations over the past six months.
- Direct costs, defined as the average costs of an ER visit, hospitalization, and physician visit, were imputed from age group- and region-specific Medical Expenditure Panel Survey (MEPS) data from 2018.<sup>8</sup>
- Costs associated with work productivity impairment were calculated using estimated wages/salaries for each respondent using data from the Bureau of Labor Statistics from 2020.<sup>9</sup>
- Bivariate analyses were conducted to compare study variables across racial/ethnic groups.
- Analyses were conducted separately for the CD and UC cohorts using Chi-square tests, analysis of variance (ANOVA), and independent sample t tests.
- Multiplicity adjustments were conducted using the Bonferroni correction for multiple comparisons.

## CONCLUSIONS

- **Hispanic participants with self-reported CD and UC reported more mean GE visits than White and Black participants.**
- **Hispanic participants reported more mean HCP visits (UC only) and hospitalizations than White participants and more mean hospitalizations (CD only) than Black participants.**
- **Black and Hispanic participants with self-reported UC reported more mean ER visits than White participants, which may suggest poorer disease control among Black and Hispanic individuals with IBD.**
- **Consistent with higher HCRU rates, annualized direct medical costs were higher for Hispanic participants with UC than White participants, and for Hispanic participants with CD than both White and Black participants.**
- **Further research is needed to better characterize the relationship between race/ethnicity and HCRU, including consideration of disease severity and socioeconomic status as key factors influencing associations.**

## RESULTS

### Sociodemographic Characteristics

- Analyses included a total of 2,577 participants:
  - CD: 818 White (76.0%), 109 Black (10.1%), and 150 Hispanic (13.9%)
  - UC: 1,150 White (76.7%), 99 Black (6.6%), and 251 Hispanic (16.7%)
- Several sociodemographic characteristics differed significantly between racial/ethnic groups (Table 1).
  - Mean age was lower among Black and Hispanic participants with CD and UC than among White participants (all  $P < 0.001$ ).
  - A greater proportion of Hispanic participants with CD and UC were employed full time than White participants (both  $P < 0.001$ ).
  - A greater proportion of Black participants with CD had a household income <\$25,000 USD than White ( $P < 0.001$ ) and Hispanic ( $P = 0.001$ ) participants.
  - A greater proportion of Black and Hispanic participants with CD did not have commercial health insurance than White participants (both  $P = 0.02$ ); similarly, more Hispanic participants with UC lacked health insurance than White participants ( $P = 0.001$ ).
  - Severe disease was more frequently reported among Black participants with CD than among White participants ( $P = 0.03$ ) and among Hispanic participants with UC than among White participants ( $P = 0.04$ ).

Table 1. Sociodemographic characteristics

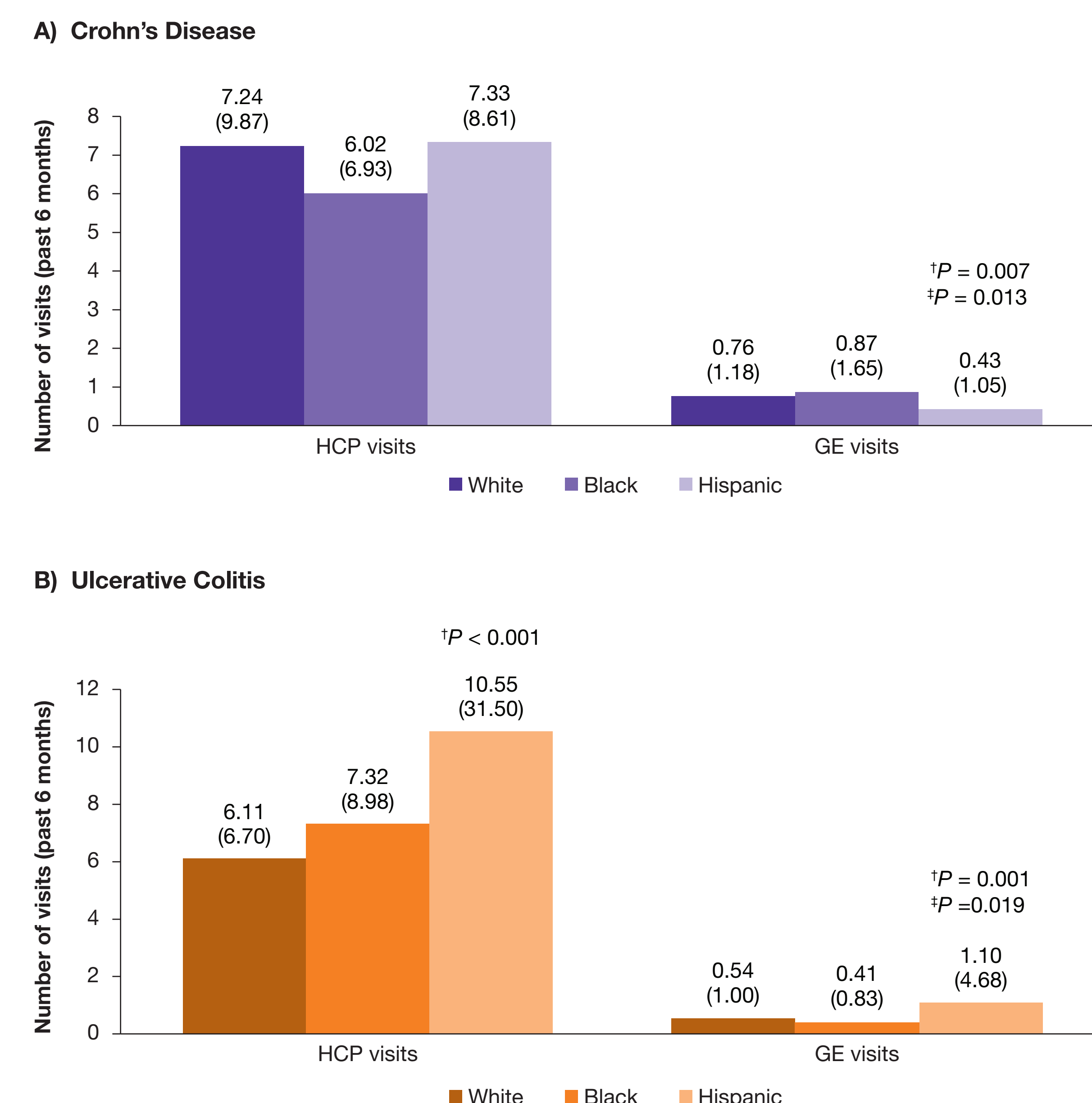
	Crohn's Disease (N = 1,077)			Ulcerative Colitis (N = 1,500)		
	White (n = 818)	Black (n = 109)	Hispanic (n = 150)	White (n = 1,150)	Black (n = 99)	Hispanic (n = 251)
Female, n (%)	421 (51.5%)	55 (50.5%)	55 (36.7%) <sup>†</sup>	696 (60.5%)	47 (47.5%) <sup>*</sup>	138 (55.0%)
Age in years, mean (SD)	48.34 (16.48)	36.84 (14.39) <sup>*</sup>	34.05 (11.05) <sup>†</sup>	52.48 (16.28)	38.48 (16.08) <sup>*</sup>	38.45 (14.27) <sup>†</sup>
Marital Status, n (%)						
Married/living with partner	518 (63.3%)	37 (33.9%) <sup>*</sup>	94 (62.7%) <sup>†</sup>	718 (62.4%)	29 (29.3%) <sup>*</sup>	125 (49.8%) <sup>†</sup>
Single, not married/divorced/separated/widowed	299 (36.6%)	71 (65.3%) <sup>*</sup>	56 (37.3%) <sup>†</sup>	429 (37.3%)	70 (70.7%) <sup>*</sup>	124 (49.4%) <sup>†</sup>
Decline to answer	1 (0.1%)	1 (0.9%)	0 (0.0%)	3 (0.3%)	0 (0.0%)	2 (0.8%)
Education, n (%)						
Less than a college graduate	383 (46.8%)	66 (60.6%) <sup>*</sup>	81 (54.0%)	564 (49.0%)	59 (59.6%)	133 (53.0%)
College graduate or higher	434 (53.1%)	43 (39.4%) <sup>*</sup>	69 (46.0%)	582 (50.6%)	39 (39.4%)	118 (47.0%)
Decline to answer	1 (0.1%)	0 (0.0%)	0 (0.0%)	4 (0.3%)	1 (1.0%)	0 (0.0%)
Employment status, n (%)						
Employed full time	364 (44.5%)	56 (51.4%)	94 (62.7%) <sup>†</sup>	424 (36.9%)	44 (44.4%)	132 (52.6%) <sup>†</sup>
Self-employed	54 (6.6%)	9 (8.3%)	13 (8.7%)	78 (6.8%)	9 (9.1%)	15 (6.0%)
Employed part time	83 (10.1%)	14 (12.8%)	12 (8.0%)	85 (7.4%)	17 (17.2%) <sup>*</sup>	30 (12.0%)
Homemaker	39 (4.8%)	7 (6.4%)	3 (2.0%)	73 (6.3%)	3 (3.0%)	19 (7.6%)
Retired	159 (19.4%)	2 (1.8%) <sup>*</sup>	9 (6.0%) <sup>†</sup>	321 (27.9%)	9 (9.1%) <sup>*</sup>	29 (11.6%) <sup>†</sup>
Student	21 (2.6%)	9 (8.3%) <sup>*</sup>	7 (4.7%)	16 (1.4%)	8 (8.1%) <sup>*</sup>	8 (3.2%)
Long-term disability	56 (6.8%)	5 (4.6%)	5 (3.3%)	84 (7.3%)	2 (2.0%)	12 (4.8%)
Not employed (whether looking for work or not)	42 (5.1%)	7 (6.4%)	7 (4.7%)	69 (6.0%)	7 (7.1%)	6 (2.4%)
Household income, n (%)						
<\$25,000	102 (12.5%)	32 (29.4%) <sup>*</sup>	16 (10.7%) <sup>†</sup>	166 (14.4%)	22 (22.2%)	39 (15.5%)
\$25,000 to <\$50,000	163 (19.9%)	20 (18.3%)	29 (19.3%)	235 (20.4%)	25 (25.3%)	53 (21.1%)
\$50,000 to <\$100,000	289 (35.3%)	29 (26.6%)	47 (31.3%)	409 (35.6%)	29 (29.3%)	74 (29.5%)
\$100,000+	246 (30.1%)	27 (24.8%)	57 (38.0%)	299 (26.0%)	23 (23.2%)	77 (30.7%)
Decline to answer	18 (2.2%)	1 (0.9%)	1 (0.7%)	41 (3.6%)	0 (0.0%)	8 (3.2%)
Health insurance, n (%)						
Not insured	58 (7.1%)	16 (14.7%) <sup>*</sup>	21 (14.0%) <sup>†</sup>	88 (7.7%)	11 (11.1%)	37 (14.7%) <sup>†</sup>
Commercially insured	456 (55.7%)	65 (59.6%)	91 (60.7%)	583 (50.7%)	54 (54.5%)	149 (59.4%) <sup>†</sup>
Medicaid	81 (9.9%)	10 (9.2%)	11 (7.3%)	85 (7.4%)	13 (13.1%)	21 (8.4%)
Medicare	203 (24.8%)	15 (13.8%) <sup>*</sup>	14 (9.3%)	362 (31.5%)	16 (16.2%) <sup>*</sup>	27 (10.8%) <sup>†</sup>
Other type of insurance/unsure	20 (2.4%)	3 (2.8%)	3 (2.0%)	32 (2.8%)	5 (5.1%)	17 (6.8%) <sup>†</sup>
Severity of condition, n (%)						
Mild	514 (62.8%)	51 (46.8%) <sup>*</sup>	83 (55.3%)	789 (68.6%)	61 (61.6%)	134 (53.4%) <sup>†</sup>
Moderate	249 (30.4%)	43 (39.4%)	50 (33.3%)	300 (26.1%)	27 (27.3%)	93 (37.1%) <sup>†</sup>
Severe	55 (6.7%)	15 (13.8%) <sup>*</sup>	17 (11.3%)	61 (5.3%)	11 (11.1%)	24 (9.6%) <sup>†</sup>

<sup>\*</sup> $P < 0.05$  between Black and White participants; <sup>†</sup> $P < 0.05$  between Hispanic and White participants; <sup>‡</sup> $P < 0.05$  between Hispanic and Black participants. Abbreviations: SD = standard deviation.

### Healthcare Resource Utilization

- Hispanic participants with CD had significantly fewer mean GE visits than White participants and Black participants; however, the total number of HCP visits did not differ across racial/ethnic groups (Figure 1A).
- Hispanic participants with UC had significantly more mean HCP visits than White participants and more mean GE visits than White and Black participants (Figure 1B).

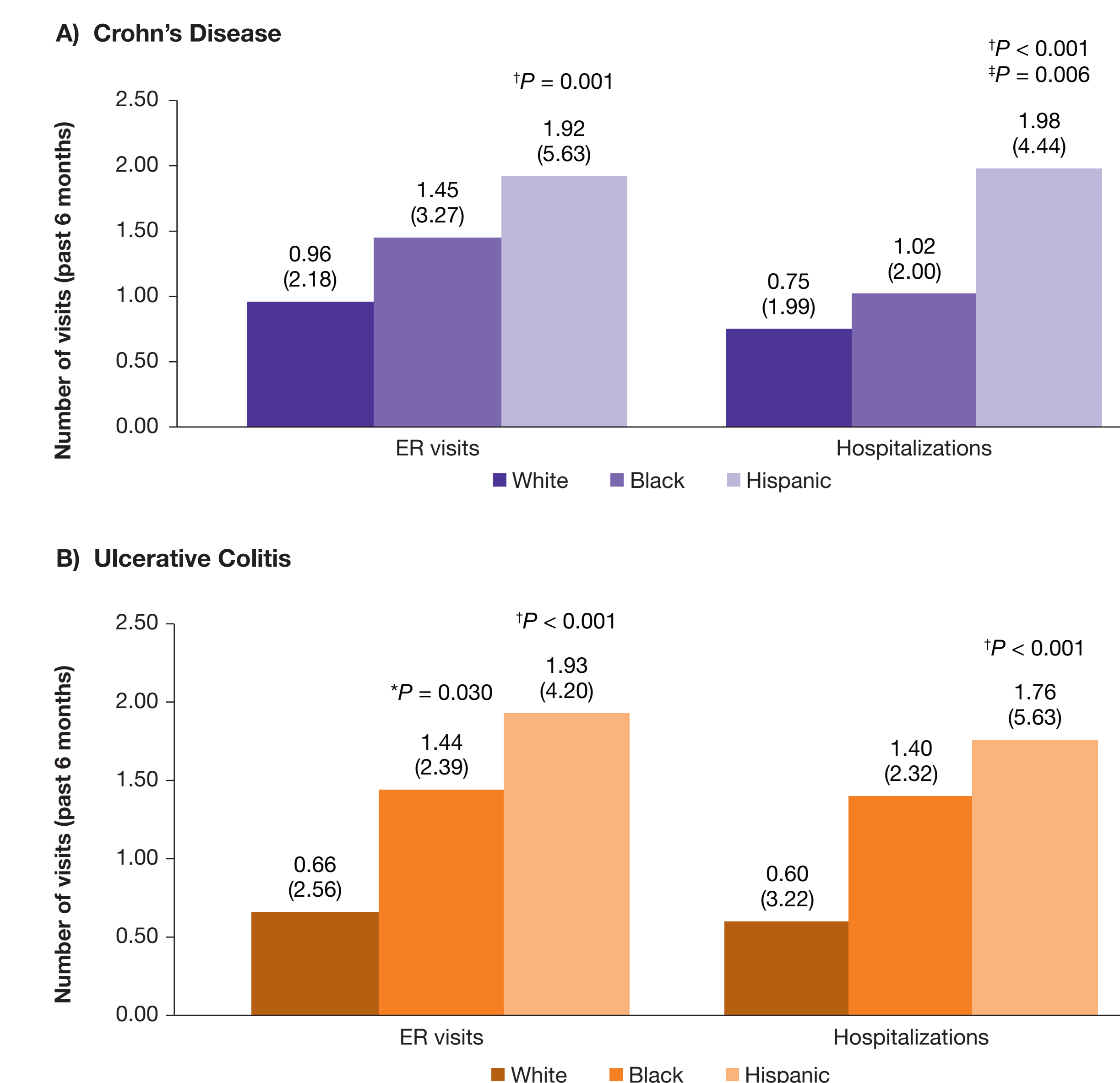
Figure 1. Healthcare practitioner and gastroenterologist visits in participants with self-reported inflammatory bowel disease



Values are presented as mean number of visits (standard deviation) over the past 6 months. Note: HCP visits include visits to any of the following general practitioner/family practitioner, internist, allergist, cardiologist, dentist, dermatologist, diabetologist, endocrinologist, gastroenterologist, gynecologist, geriatrician, hepatologist, infectious disease, specialist/infectious diseases such as HIV or hepatitis, neurologist, nephrologist, nurse practitioner/physician assistant, obstetrician, oncologist, ophthalmologist, orthopedist, otolaryngologist (ear, nose, and throat specialist), plastic surgeon, podiatrist, psychiatrist, psychologist/therapist, pulmonologist (lung specialist), respiratory therapist, rheumatologist, endocrinologist, other medical specialist. Abbreviations: GE = gastroenterologist; HCP = healthcare practitioner.

- Hispanic participants with CD had significantly more mean ER visits than White participants and more mean hospitalizations than White and Black participants (Figure 2A).
- Black and Hispanic participants with UC had significantly more mean ER visits than White participants, and Hispanic participants had more mean hospitalizations than White participants (Figure 2B).

Figure 2. Emergency room visits and hospitalizations in participants with self-reported inflammatory bowel disease

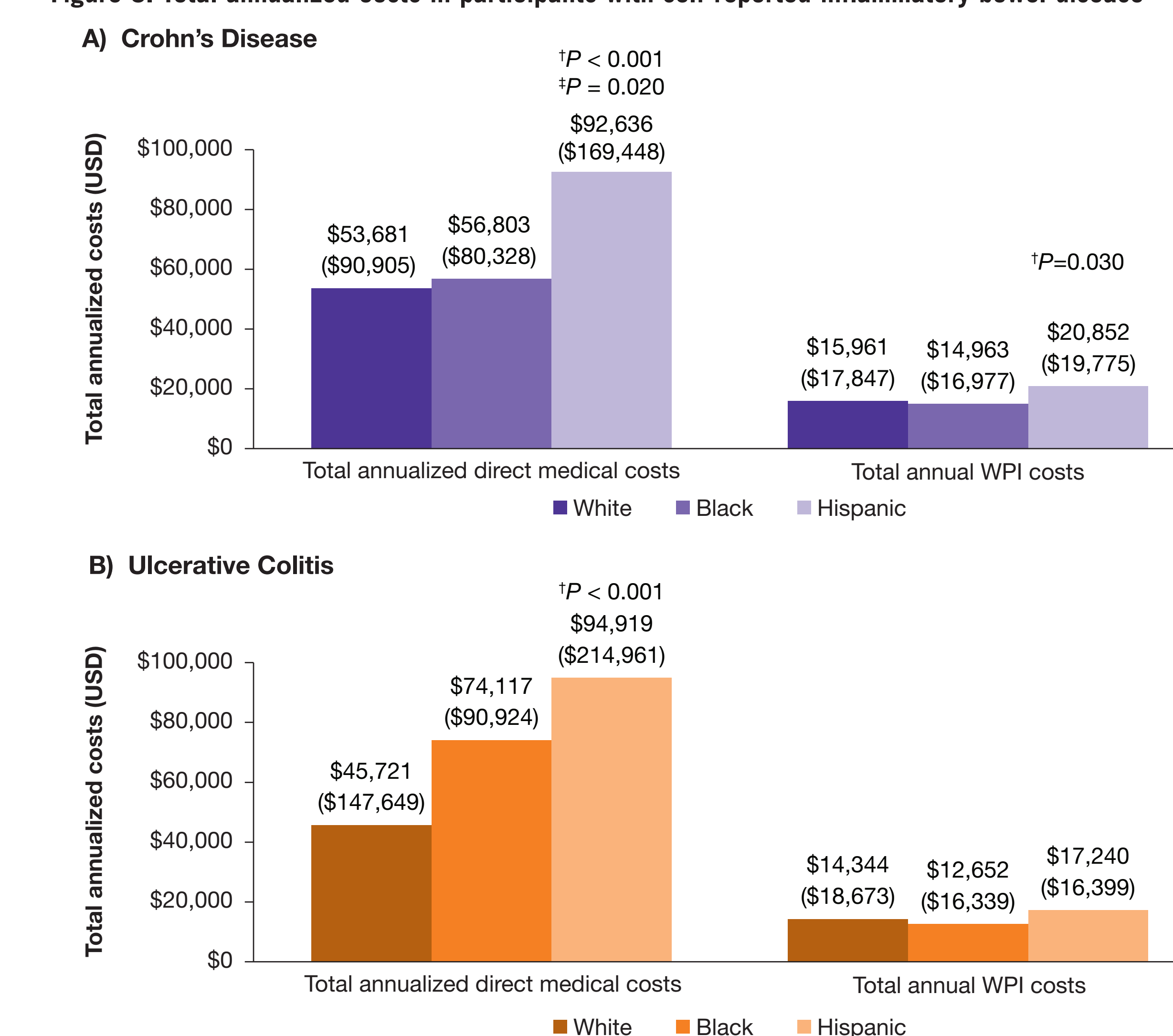


Values are presented as mean number of visits (standard deviation) over the past 6 months. Note: ER = emergency room. Abbreviations: ER = emergency room.

### Annualized Costs

- Annualized direct medical costs were significantly higher for Hispanic participants than for White participants with CD (Figure 3A) and UC (Figure 3B).
- Hispanic participants with CD also had significantly higher annualized direct medical costs than Black participants (Figure 3A).
- Total annual costs associated with work productivity impairment were higher for Hispanic participants with CD than for White participants (Figure 3A).

Figure 3. Total annualized costs in participants with self-reported inflammatory bowel disease



Values are presented as total annualized costs (standard deviation). Note: Total annual WPI costs were only calculated among respondents who were participating in the labor force at the time of the survey and who had a valid response (i.e., non-missing) for the number of hours worked in the past 7 days and the number of hours missed in the past 7 days. Abbreviations: WPI = Work Productivity Impairment. USD = United States dollars.

### Limitations

- Limitations of this study include the use of convenience sampling (as respondents self-select to participate in the NHWS, which may underrepresent some groups and differ from the broader US population), relatively small sample sizes for the Black and Hispanic groups, the self-reported nature of the data, potentially outdated cost analysis (i.e., using 2018 costs), and use of only bivariate statistics.

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### Disclosures

SCB and AAP are employees of Janssen Scientific Affairs (JSA, LLC) at Johnson & Johnson company and hold stock in Johnson & Johnson. KK, JCM, and NW are employees of Cerner Enviza and paid consultants of JSA. JL is an employee of Morehouse School of Medicine and a paid consultant of JSA. The study is funded by Janssen Pharmaceuticals.