

# DNA Stool Tests for Colorectal Cancer Screening Growing in Popularity, Especially for Patients Under Age 50

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Last updated 14 May 2024 • Check for updates at [EpicResearch.org](https://EpicResearch.org)

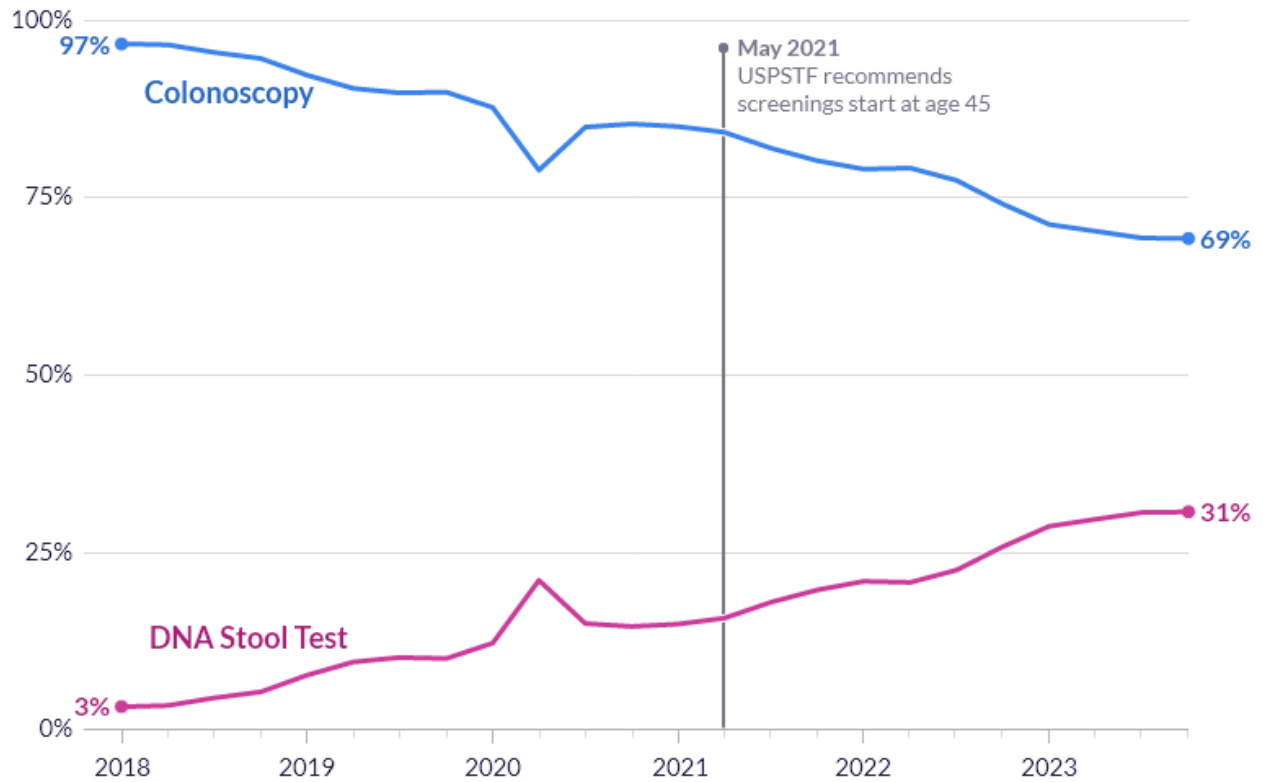
## Key Findings:

- The use of DNA stool tests for colorectal cancer screening has increased more than nine-fold since 2018, rising from 3% of screenings in the first quarter of 2018 to 31% of screenings in the fourth quarter of 2023.
- Patients aged 45 to 49 used DNA stool testing for their colorectal cancer screening at a higher rate than those aged 50 to 55.
- Patients with the highest social vulnerability index had lower rates of DNA stool testing compared to those with less social vulnerability, though the use among each group has increased.

In a [previous study](#), we highlighted an increase in colorectal cancer screenings following an expansion of guidelines.<sup>1</sup> Patients have a variety of screening methods to choose from, including stool-based tests such as DNA stool tests and fecal occult blood tests, as well as imaging procedures like colonoscopy and sigmoidoscopy.<sup>2</sup>

We studied 1,422,099 first-time colorectal cancer screenings conducted by colonoscopy or DNA stool test between 2018 and 2023. We aimed to understand how the proportion of each method has evolved over time. In early 2018, colonoscopies accounted for 96% of colorectal cancer screenings. However, this proportion has gradually decreased, dropping below 70% of screenings in the third quarter of 2023, as seen in Figure 1. Conversely, the use of DNA stool tests has been on the rise, with a significant increase in the second quarter of 2020 and a continued upward trajectory to 31% of screenings in the fourth quarter of 2023.

## Colorectal Cancer Screening Trends by Method



N=1,422,099 screenings

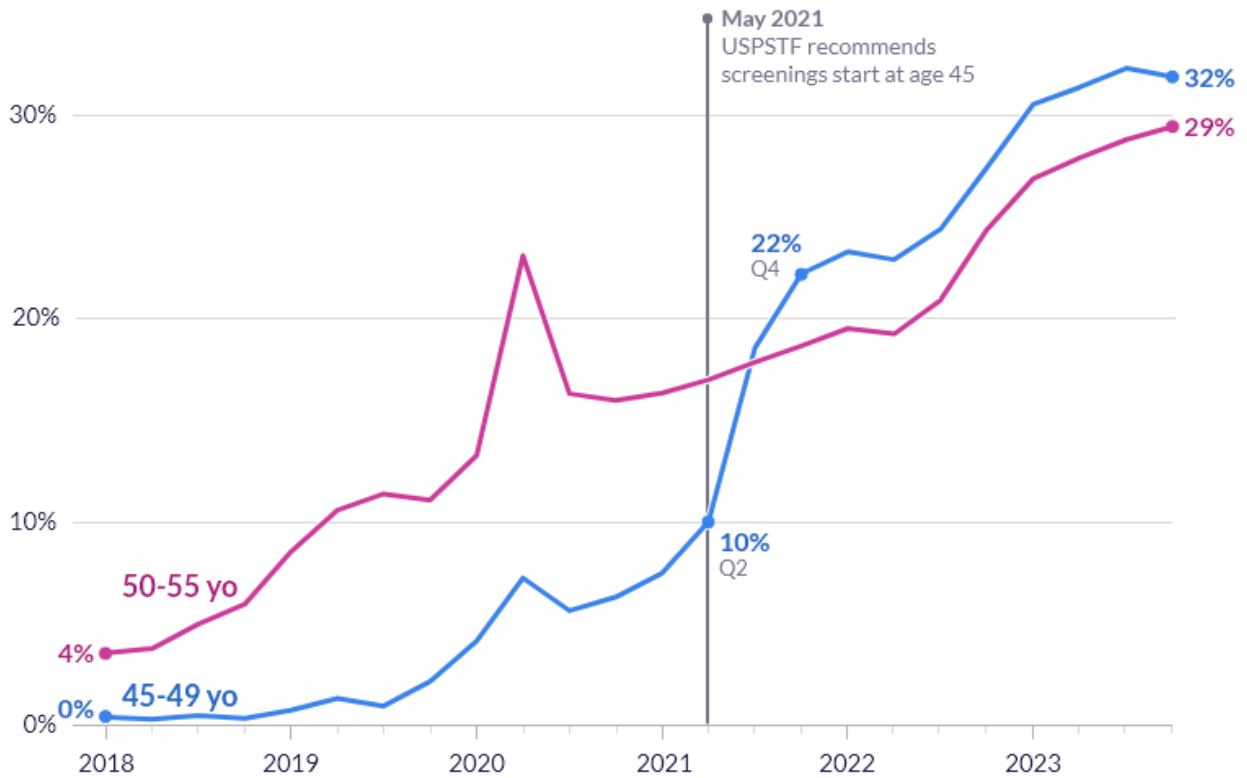
"Colorectal Cancer Screening Trends by Method," 2024. EpicResearch.org

Figure 1. The percentage of colorectal cancer screenings completed with a DNA stool test and colonoscopy.

We wanted to understand whether the proportions of screening types had changed across subpopulations over the same period. We stratified the data by age, social vulnerability, and insurance coverage. We found that DNA stool testing has increased across all subpopulations.

In May 2021, the U.S. Preventative Services Task Force (USPSTF) expanded its colorectal cancer screening recommendation to include all adults aged 45 to 49.<sup>2</sup> Subsequently, the use of DNA stool tests for this group increased from 10% of screenings in the second quarter of 2021 to 22% of screenings in the fourth quarter of that same year. By the end of 2023, nearly a third of colorectal cancer screenings were performed by DNA stool test for this population. For patients aged 50 to 55, a large increase in DNA stool testing was observed during the second quarter of 2020. In the following quarters, rates trended upward but remained slightly lower than the 45- to 49-year-old group.

## Percentage of Screenings Using DNA Stool Testing by Age



N=1,422,099 screenings

"Percentage of Screenings Using DNA Stool Testing by Age," 2024. EpicResearch.org

Figure 2. The percentage of colorectal cancer screenings performed with a DNA stool test by age.

Across social vulnerability index quartiles, DNA stool testing has increased at a similar rate for those in the first through the third quartile. However, those in the fourth quartile, the most vulnerable, have continued to have the lowest percentage of their colorectal screenings completed using a DNA stool test.

## Percentage of Screenings Using DNA Stool Testing by Social Vulnerability

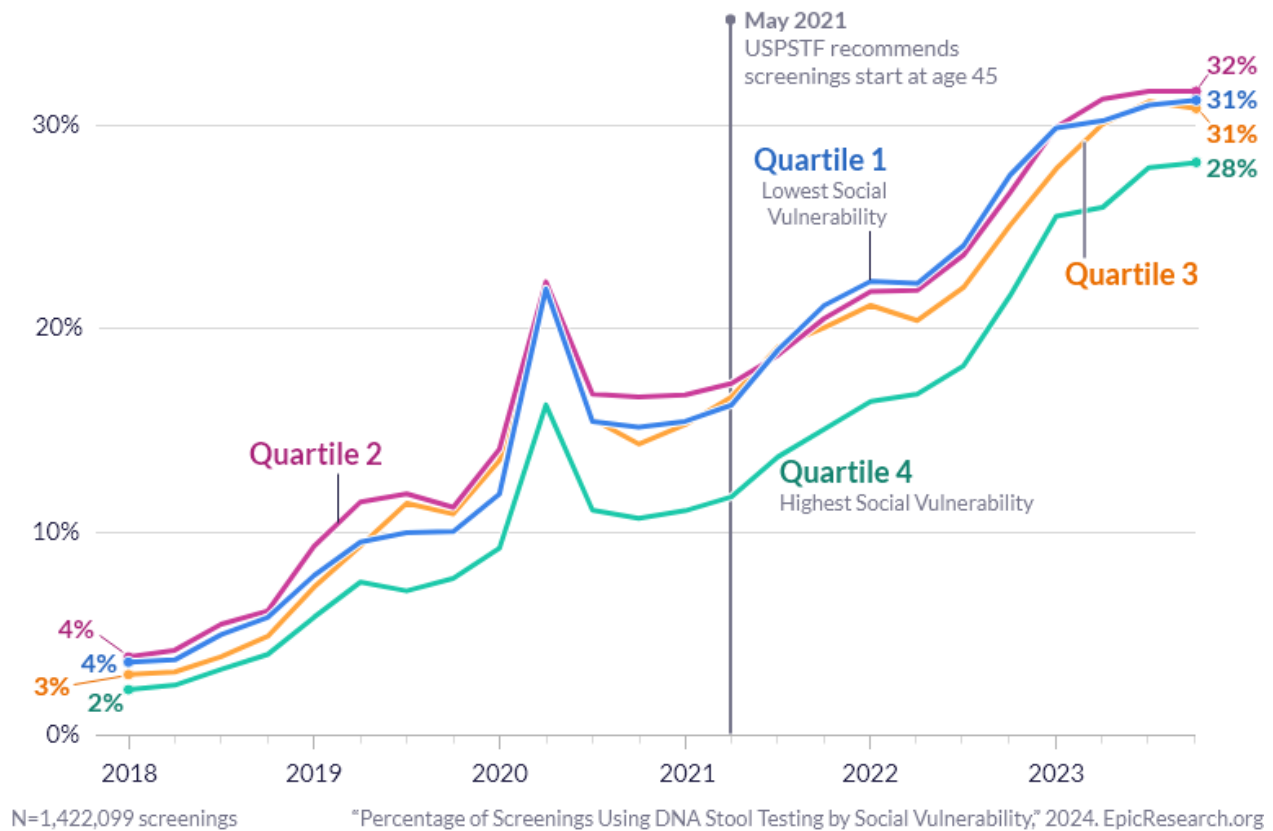


Figure 3. The percentage of colorectal cancer screenings performed with a DNA stool test by social vulnerability index quartile.

We did not observe meaningful differences in the proportion of colorectal cancer screenings performed using a DNA stool test over time when stratified by patient sex or rural and urban classification.

These data come from Cosmos, a dataset created in collaboration with a community of Epic health systems representing more than 246 million patient records from 1,400 hospitals and more than 32,800 clinics from all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

Exact Sciences, the manufacturer of the FDA-approved DNA stool test, Cologuard, is an Epic customer but was not involved in this study.

## References

1. Fox B, Joyce B, Allen S, Sahakian S. Colorectal Cancer Screening Rates on the Rise Following Guideline Expansion. Epic Research. <https://epicresearch.org/articles/colorectal-cancer-screening-rates-on-the-rise-following-guideline-expansion>. Accessed on February 28, 2024.
2. U.S. Preventive Services Task Force. Colorectal cancer: screening. <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/colorectal-cancer-screening>. Accessed February 28, 2024.

## Data Definitions

Term	Definition
Study period	1/1/2018 to 12/31/2023
Study population	Patients with no previous history of colorectal cancer or cancer treatment. Patient's first colorectal cancer screening. Exclude patients with evidence of conditions that increase need for screenings. Patients aged 45 to 55. Include only departments contributing data for the full study period.
Colorectal cancer screening	A DNA stool test or screening colonoscopy.
DNA stool test	One of the following: A procedure that contains the name "colorec" and "DNA," has CPT code 81528, or has SNOMED code 457591000124105. A lab with LOINC code 77353-1 or 77354-9.
Screening colonoscopy	A procedure that contains the name "colonoscopy" and "screen" and not "virtual" or contains HCPCS code G2204, G0105, or G0121 or CPT code 44388, 44389, 44390, 44391, 44391, 44394, 44401, 44402, 44403, 44404, 44405, 44406, 44407, 44408, 45378, 45379, 45380, 45381, 45382, 45384, 45385, 45386, 45391, or 45392.  Also needs a procedure modifier of "PT" or "33" or a diagnosis of ICD-10-CM code Z12.11 on the same encounter for the procedures that aren't found with one of the HCPCS codes.
Increase need for screening	A history of ulcerative colitis, Crohn's disease, irritable bowel syndrome, familial adenomatous polyposis, or history of polyps.
Colorectal cancer	A diagnosis with ICD-10-CM C18.*, C19.*, or C20.*
Ulcerative colitis	A diagnosis with ICD-10-CM K51.*
Crohn's disease	A diagnosis with ICD-10-CM K50.*
Irritable bowel syndrome	A diagnosis with ICD-10-CM K58.*
Familial adenomatous polyposis	A diagnosis with ICD-10-CM D13.91.
Polyps	A diagnosis with ICD-10-CM D12.0, D12.1, D12.2, D12.13, D12.4, D12.5, D12.6, D12.7, D12.8, or K63.5.

**Table 1: Colorectal Cancer Screening Trends by Method**

Quarter Start Date	Total	Colonoscopy	DNA Stool Test	Colonoscopy Rate	DNA Stool Test Rate
1/1/2018	43,189	41,775	1,414	96.7%	3.3%
4/1/2018	44,090	42,570	1,520	96.6%	3.4%
7/1/2018	43,865	41,888	1,977	95.5%	4.5%
10/1/2018	49,430	46,779	2,651	94.6%	5.4%
1/1/2019	46,195	42,634	3,561	92.3%	7.7%
4/1/2019	47,243	42,716	4,527	90.4%	9.6%
7/1/2019	45,609	40,953	4,656	89.8%	10.2%
10/1/2019	49,846	44,816	5,030	89.9%	10.1%

1/1/2020	41,211	36,155	5,056	87.7%	12.3%
4/1/2020	15,531	12,252	3,279	78.9%	21.1%
7/1/2020	39,408	33,487	5,921	85.0%	15.0%
10/1/2020	46,897	40,053	6,844	85.4%	14.6%
1/1/2021	45,063	38,324	6,739	85.0%	15.0%
4/1/2021	50,385	42,434	7,951	84.2%	15.8%
7/1/2021	50,631	41,508	9,123	82.0%	18.0%
10/1/2021	59,730	47,914	11,816	80.2%	19.8%
1/1/2022	65,299	51,605	13,694	79.0%	21.0%
4/1/2022	75,088	59,445	15,643	79.2%	20.8%
7/1/2022	79,067	61,236	17,831	77.4%	22.6%
10/1/2022	88,701	65,731	22,970	74.1%	25.9%
1/1/2023	99,993	71,227	28,766	71.2%	28.8%
4/1/2023	102,312	71,879	30,433	70.3%	29.7%
7/1/2023	96,431	66,830	29,601	69.3%	30.7%
10/1/2023	96,885	67,073	29,812	69.2%	30.8%

**Table 2: Percentage of Screenings Using DNA Stool Testing by Age**

Quarter Start Date	Age 45-49	Age 50-55
1/1/2018	0.4%	3.5%
4/1/2018	0.3%	3.7%
7/1/2018	0.4%	5.0%
10/1/2018	0.3%	5.9%
1/1/2019	0.7%	8.5%
4/1/2019	1.3%	10.6%
7/1/2019	0.9%	11.4%
10/1/2019	2.1%	11.1%
1/1/2020	4.1%	13.3%
4/1/2020	7.2%	23.1%
7/1/2020	5.6%	16.3%
10/1/2020	6.3%	16.0%
1/1/2021	7.5%	16.3%
4/1/2021	10.0%	17.0%
7/1/2021	18.6%	17.9%
10/1/2021	22.2%	18.7%
1/1/2022	23.3%	19.5%
4/1/2022	22.9%	19.2%
7/1/2022	24.4%	20.9%
10/1/2022	27.4%	24.4%
1/1/2023	30.5%	26.9%

4/1/2023	31.4%	27.9%
7/1/2023	32.3%	28.8%
10/1/2023	31.9%	29.4%

**Table 3:**

Quarter Start Date	SVI 1	SVI 2	SVI 3	SVI 4
1/1/2018	3.6%	3.8%	3.0%	2.2%
4/1/2018	3.7%	4.2%	3.1%	2.4%
7/1/2018	4.9%	5.4%	3.9%	3.2%
10/1/2018	5.8%	6.1%	4.9%	4.0%
1/1/2019	7.8%	9.3%	7.3%	5.8%
4/1/2019	9.5%	11.5%	9.3%	7.5%
7/1/2019	10.0%	11.9%	11.4%	7.1%
10/1/2019	10.0%	11.2%	10.9%	7.7%
1/1/2020	11.8%	14.1%	13.5%	9.2%
4/1/2020	21.9%	22.3%	22.2%	16.3%
7/1/2020	15.4%	16.8%	15.6%	11.1%
10/1/2020	15.2%	16.6%	14.3%	10.7%
1/1/2021	15.4%	16.7%	15.3%	11.0%
4/1/2021	16.2%	17.3%	16.7%	11.7%
7/1/2021	19.0%	18.7%	19.1%	13.7%
10/1/2021	21.1%	20.5%	20.1%	15.1%
1/1/2022	22.3%	21.8%	21.2%	16.4%
4/1/2022	22.2%	21.9%	20.4%	16.8%
7/1/2022	24.1%	23.6%	22.0%	18.2%
10/1/2022	27.5%	26.7%	25.1%	21.7%
1/1/2023	29.9%	29.9%	27.9%	25.6%
4/1/2023	30.2%	31.3%	30.1%	26.0%
7/1/2023	31.0%	31.7%	31.2%	28.0%
10/1/2023	31.2%	31.7%	30.8%	28.2%