Cancer Screening: Patient Navigation Services to Increase Screening for Colorectal Cancer

Summary Evidence Tables – Systematic Economic Review

This table outlines information from the studies included in the Community Guide economic review of patient navigation services to increase colorectal cancer screening. The table details study design and economic analysis, population and intervention characteristics, and economic outcomes considered in this review. Complete references for each study can be found in the Included Studies section of the review summary. [https://www.thecommunityguide.org/pages/glossary.html#quality-based-on-measure]

Abbreviations Used in This Document:

- Economic outcomes:
  - QALY: quality-adjusted life year
  - ROI: return on investment
- Study design:
  - RCT: randomized controlled trial
- Measurement terms:
  - Pct pt: percentage point
- Other terms:
  - CRC, colorectal cancer
  - EMR: electronic medical record
  - FIT, fecal immunochemical test
  - FOBT: fecal occult blood test
  - NA, not applicable
  - NR: not reported
  - PN, patient navigator

Notes:

Quality of economic estimates – Studies are assessed to be of good, fair, or limited quality. This valuation is based on two domains: Quality of Capture, and Quality of Measurement. Read more >> [https://www.thecommunityguide.org/pages/glossary.html#quality-based-on-measure]

Race/ethnicity of the study population: The Community Guide only summarizes race/ethnicity for studies conducted in the United States.

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Author (Year): Baker et al. (2014) **Design**: RCT **Cancer Types:** Colorectal **Economic Outcome:** Intervention Incremental cost **Funding Source:** Agency for Healthcare Research and Quality (AHRQ) **Monetary Values:** Assumed reported in 2011 U.S. dollars.	**Location:** Chicago, Illinois, USA **Setting:** Clinic - Federally qualified health center **Population:** Inclusion of average-risk adults ages 50–74 not up-to-date with screening in mostly Hispanic/Latino population. . **Sample Size:** Usual care 255 Intervention 255 **Characteristics:** **Mean Age:** 59.5 years **Female** 70.2% Hispanic/Latino 87% **Other** 13% **Uninsured** 77% **Time Horizon:** started in 2011	**Intervention:** Patients due for annual FOBT were mailed FOBT kits If the FOBT was not returned in 2 weeks, they received an automated call and text. After 3 months, the CRC screening navigator called patients who failed to complete the FOBT; a second FOBT was sent to patients who could be contacted and who said they would complete it if sent again. If a returned FOBT result was negative, patients were informed by mail; if the FOBT result was positive, colonoscopy was arranged, and the patient was tracked until completion. **Type of screening test:** FOBT **Comparison:** Usual care	**Incremental pct pt increase in colorectal cancer screening versus enhanced usual care:** 44.1 pct pts Intervention 82.2% vs Control 37.3% **Data Source:** Erie Family Health Center systems electronic health records	**Intervention cost per person**: $45.00 **Intervention cost per additional person screened:** $56 **Components of intervention cost:** Navigator outreach cost. **Source:** Electronic health records **Quality:** Good	**NR**	**NR**
Author (Year): Davis T et al. (2013) **Design:** Pre to post with control	**Location:** North Louisiana, Louisiana, USA **Setting:** Health centers **Population:** Current English-speaking health center patients age 50	**Intervention:** Patient navigation by trained nurse. Structured interview before physician visit and education materials regarding FOBT. The nurses used motivational interviewing techniques	**Incremental pct pt increase in colorectal cancer screening versus enhanced usual care:**	**Intervention cost per person:** $295.48 **Intervention cost per additional person**	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Cancer Types: Colorectal **Economic Outcome:** Intervention cost **Funding Source:** National Institutes of Health, National Cancer Institute **Monetary Values:** Assumed reported in 2011 U.S. dollars.	to 85 years not up to date with CRC screening. **Sample Size:** Intervention: 404 Enhanced usual care: 275 Education only: 282 **Characteristics:** Mean Age 59.2 years Female 77% African American 83% Other 17% Uninsured 100% Less than High School 31% Mostly rural **Time Horizon:** Study period May 2008 through August 2011	to identify and problem-solve barriers and motivate patients to complete FOBTs. If patients did not return their FOBT, the nurses followed up by telephone within 2 weeks and again in 1 month. For results that were positive, the nurse called patients to discuss the results, facilitate appointments with their primary care provider, and, if indicated, schedule patients for a diagnostic colonoscopy at the appropriate treatment center. **Type of screening test**: FOBT **Comparison:** Enhanced usual care	22 pct pt Baseline screening rate was <3%. Nurse patient navigation 60.6% Enhanced usual care 38.6% Education 57.1% **Data Source:** Documented by navigator.	**screened:** $1,337 **Components of intervention cost:** Navigator wages, mailings. **Source:** Labor costs: Study time logs; Non-labor costs: Expense Reports; Costs of office visits & screening tests: Participating clinics **Quality:** Good		
Author (Year): Davis MM et al. (2019) **Design:** Modeled **Cancer Types:** Colorectal **Economic Outcome:**	**Location:** Oregon, USA **Setting:** NA, simulated **Population:** Oregon Medicaid population under Affordable Care Act of 2010 and Medicaid expansion in 2014. **Sample Size:** Intervention: 68,077	**Intervention:** Modeled mailed FIT kit and patient navigation by professional patient navigator. Baseline up to date status based on Oregon Medicaid demographics and claims data. Type of screening test was FIT.	**Incremental pct pt increase in colorectal cancer screening versus control:** 20.2 pct pt **Data Source:** Annual screening	**Intervention cost per person:** $285 **Intervention cost per additional person screened:** $1,425	**Total 5-year Costs** Procedures Cost: FIT+Navigation $25,263,119 Usual care $25,177,732 Cancer Treatment: FIT+Navigation $2,514,842 Usual care $3,008,082 **Source:** Claims data	**5-year net cost:** $35 per person **5-year life years gained:** 0.013 per person **5-year net cost per life year gained:** $2,706 **Quality:** Fair

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Cost per Life Year Gained **Funding Source:** Centers for Disease Control and Prevention, National Cancer Institute **Monetary Values:** Assumed reported in 2017 U.S. dollars.	Control: NA **Characteristics:** Age: 50-54 years 46.3%; 55-59 years 30.8%; 60-64 years 23% Female 50.4% African American race 2.9% White race 82.6% Other race 14.4% Hispanic Ethnicity 7.1% Medicaid 100% Rural 40.5% **Time Horizon:** Simulation over 5 years from Jan 1, 2019 through Dec 31, 2023. Based on Medicaid claims from 2010-2013.	**Comparison:** No FIT kit and no patient navigation	reports from Oregon Accountable Care Organizations. Intervention effectiveness from literature.	**Components of intervention cost:** Navigator wages, technical staff for tracking, navigator training, FIT kit, mailing, tracking, phone reminders. **Source:** Evaluation literature and expert opinion. **Quality:** Good	**Quality:** Good	
Author (Year): De Mil et al. (2018) **Design:** RCT **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** French National Institute of Cancer and	**Location:** Picardy Region, France **Setting:** Clinic-Community **Population:** Patients aged 50 to 74 with phones who were unresponsive to 2 rounds of reminders by mail to get screened. Patients segmented into rural/urban and high-affluence/low-affluence. **Sample Size:** Intervention: 8,105 Control: 8,145	**Intervention:** FOBT was recommended every 2 years in France. Intervention added navigation by social workers to the national screening program protocol. Navigation began with an informational postal mail about 4 months after screening invitation, with a toll-free number and e-mail address to contact navigator. After 10 days, initiated structured phone call to identify barriers to screening. Services were	**Increment in screening at 24 months:** Incremental screening across all patients 3.3 pct pt (24.4% v 21.1%). Incremental screening in low- affluence population 0.9 pct pt (22.9% versus 22.0%). **Data Source:** Project records.	**2-year intervention cost** Total cost €321,787 Cost per person €39.70 Intervention cost per additional screened: Global €1,212. For deprived subset €1,527. For affluent subset €967.	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Cancéropole Nord-Ouest **Monetary Values:** Reported in 2013 Euros	**Characteristics:** Age: ≤55 years 38.8%; 56-60 years 23%; 61-65 years 19.8%; 66-70 years 11.1%; 70-75 years 7.2% Female 51.5% **Time Horizon:** April 2011 to April 2013	phone follow-ups, home visits, and mailed FOBT kit. If phone contact failed after 4 attempts, a postal reminder sent asking for phone number and whether home visit is preferred. Type of screening test was FOBT. **Comparison:** Control patients under national screening program received mailed reminder to see general practitioner who decided whether to hand them an FOBT kit.		**Components of intervention cost:** Navigator wages, hiring and training, supplies, supervision, administrative support. **Source:** Navigator logs, staff interviews, project tasks and area wages. **Quality:** Good		
Author (Year): Elkin et al. (2012) **Design:** Pre to post with control **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost, ROI **Funding Source:**	**Location:** New York, New York, USA **Setting:** Hospital – government owned **Population:** Patients for navigation identified from appointment schedules for colonoscopy. **Sample Size:** Intervention: 25,481 Control: 18,845 **Characteristics:**	Intervention: Lay health educators trained and hired as full-time navigators, recruited from within New York City-owned hospital system or surrounding community. Activities of navigator included patient reminder about appointment for colonoscopy, patient education about bowel preparation and colonoscopy procedure, address patient concerns, linking to	**Additional colonoscopies per month:** Hospital A 44, Hospital B 48, Hospital C 67. Incremental probability of completed colonoscopy was 0.2 for each hospital. **Data Source:** Department of Health, Hospital colonoscopy	**Monthly cost per patient referred to navigation:** Hospital A $74 Hospital B $287 Hospital C $51 **Intervention cost per additional colonoscopy completed:** Hospital A $369 Hospital B $1,434 Hospital C $254	**NR**	**Net Financial Benefit (Medicare reimbursement-average cost of colonoscopy - program cost per additional colonoscopy):** Hospital A: $16 (=697-461-220), Hospital B: -$446 (=697-435-708), Hospital C: $45 (=697-453-199) **ROI:** Hospital A 2.3%

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
New York Community Trust **Monetary Values:** Assumed reported in 2006 U.S. dollars.	Age < 50 12.1%, 50-64 60%, => 65 27.9% Female 60.3% African American 16.4% Hispanic 70.8% Asian 6.3% White 3.9% Other 6.4% Uninsured 16.8% Less than high school 69.3% Rural 0% **Time Horizon:** Pre is 12 month before implementation and and post is month of program implementation through June 2007. Implementation dates were: Hospital B May 2003; Hospital A October 2005; Hospital C January 2006.	financial services. Interaction by phone or in person. Type of screening test was colonoscopy. Comparison: 3 government hospitals with navigation program	records, navigation tracking system	**Components of intervention cost:** Navigator wages, pagers. **Source:** Patient navigation tracking system, navigator logs, staff interviews **Quality:** Good		Hospital B -39.1% Hospital C 6.9% **Quality:** Good
Author (Year): Hardin et al (2022) **Design:** Pre to post with control **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** CDC	**Location:** Appalachian town of Hazard, KY **Setting:** Health Center - federally qualified **Population:** Nurses or patient navigators would identify patients due for CRC screening Inclusion of average-risk adults ages 50–74 not up-to-date with screening **Sample Size:** FIT kits distributed: Intervention: 353 Usual care 184	**Intervention:** Nurses or patient navigators would identify patients due for CRC screening During the visit, the nurse would discuss the appropriate screening options with the patient If an eligible patient chose the FIT kit, the nurse then explained how to complete and return it. Patient navigators were responsible for tracking the FIT kits. If a kit was not returned, the navigator followed up	**Additional Persons Screened:** 91 based on the 353 FIT kits distributed during implement-tation **Data Source:** CDC	**Intervention cost per person:** $38 **Intervention cost per additional person screened:** $149 **Components of intervention cost:** Patient navigator costs,	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Monetary Values: 2018 US dollars (assumed)	**Characteristics:** **Mean Age** Range 50 to 74 years **Female:** NR **Race/ethnicity:** NR **SES:** 79.7% of patients report homelessness	biweekly with a phone or mail reminder to complete and return it. This allowed the navigators to assist patients to address relatively simple barriers, such as arranging transportation to the clinic, providing further instructions on using the kit, or replacing kits that had been lost Patient navigators continued to follow up until the kit was completed and returned or the patient indicated unwillingness to complete the test. **Type of screening test:** FIT **Comparison:** Usual care (September 2016–August 2017) and implementation (September 2017–September 2018)		Processing cost of FIT kits, Postage for mailing reminders, Incentives payments for returned FIT kits . **Source:** Kentucky Department for Public Health and Little Flower Clinic (LFC), a federally qualified health center (FQHC) **Quality:** Good		
Author (Year): Herman et al. (2022) **Design:** Group RCT	**Location:** Phoenix, Arizona, USA **Setting:** Multicultural, underinsured communities in the Phoenix, Arizona, area. **Population:**	**Intervention:** Community sites were recruited and randomized to group education (GE) and GE plus tailored navigation. All those who kept a clinic appointment (no	**Incremental pct pt increase in colorectal cancer screening versus control:**	**Intervention cost per person:** $271 **Intervention cost per additional**	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Cancer Types: Colorectal **Economic Outcome:** Intervention cost **Funding Source:** National Cancer Institute **Monetary Values:** 2014 U.S. dollars.	Participants were eligible for the study if they were 50 years of age or older, English- or Spanish-speaking, and were out of compliance for CRC screening guidelines at that time. **Sample Size:** Intervention (Group Education + Tailored Navigation): 211 Group Education: 134 **Characteristics:** Mean Age 58.7 years Female 64.9% White 77.3% Hispanic 70% Other 17% Uninsured/Don't know 44.2% Less than High School 41.4% Rural 0%	matter their randomized group) received tailored navigation to complete screening (Phase II). Type of screening test: FIT, FOBT, and Colonoscopy **Comparison:** Group education	16.1 pct pt **Data Source:** Documented by the community to clinic navigation	**person screened:** $646 **Components of intervention cost:** Labor costs for navigation, non-labor costs, and the costs of office visits and screening tests. **Source:** Evaluation literature and expert opinion. **Quality:** Good		
Author (Year): Jandorf et al. (2013) **Design:** Pre to post **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost, ROI	**Location:** New York, New York, USA **Setting:** Hospital clinic **Population:** Physician ordered colonoscopy based on review of EMR during non-acute primary care visit. **Sample Size:** Intervention: 604	**Intervention:** For African American patients, the professional and peer PNs were African American. Three scripted phone calls. Reminder postcard and bowel preparation instructions mailed after first call. The calls assisted with scheduling, provided education about CRC, queried and addressed	**Additional persons screened:** 90.6 Navigation resulted in 15 pct pt increase in persons screened by colonoscopy. **Data Source:** Pre to post	**Total intervention cost:** $14,027 **Intervention cost per person:** $23 **Cost per additional person screened:**	**NR**	Revenue minus direct cost was $95,266. The net revenue minus cost of PN was $81,239 ($95,266-$14,027) **ROI:** 579% = (81239/14027) *100 **Quality:** Good

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Funding Source: National Cancer Institute, Doris Duke Charitable Foundation, Mount Sinai School of Medicine **Monetary Values:** Assumed reported in 2006 U.S. dollars.	Control: None **Characteristics:** Age ≥ 65 year 24.5%. Age < 65 years and ≥ 50 years 75.5% Female 68% African American 46.3% Hispanic 45.7% Asian 6.3% Other 8.0% Medicaid 52.7% Medicare 26.8% Annual income < $10K 43.5% Rural 0% **Time Horizon:** Patient recruitment and data from May 2008 to May 2010.	patient concerns, provided information about preparations before procedure, reminded about appointment, queried about receipt of mailed instruction, and assessed transport needs. For non-African American patients, only 1 arm addressed patient barriers. Type of screening test was colonoscopy. **Comparison:** National 2008 NHANES data	compared to NHANES data for baseline.	$154.80 **Components of intervention cost:** Navigator wages, transport, bowel prep, training, supplies. **Source:** Navigator call logs, study records, and institutional data **Quality:** Good		
Author (Year): Kim et al. (2018) **Design:** Observational study of PN implementation in a real-world setting without a comparison cohort **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost	**Location:** University of Chicago Medical Center, Illinois (Midwest), USA **Setting:** Urban academic medical center serving primarily racial/ethnic minority groups **Population:** Patients selected for navigation services included those with a prior history of a no-show, poor bowel preparation, previous cancellation, and/or multiple comorbidities, based on provider assessment, and	**Intervention:** In the non-nurse patient navigation program implemented at UCMC, individuals who received navigation were compared with a historic cohort of non-navigated patients. In addition, a previously validated data-collection instrument was tailored and used to collect all costs related to developing, implementing, and administering the program; and the	**Incremental pct pt increase in colorectal cancer screening versus control:** 10.81 (85.1-74.3) pct pt **Data Source:** Program data	**Intervention cost per additional person screened:** $1337 **Components of intervention cost:** Development, implementation, administration and management, evaluation, research and	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Funding Source: CDC **Monetary Values:** Assumed 2017 U.S. dollars.	were referred by several mechanisms including recommendation by primary care or GI faculty, through prerecorded telephone-based bowel preparation instructions, which allowed patients to self-refer; and identification through a nurse pre procedure call. **Sample Size:** Intervention: 536 Control: 2713 **Characteristics:** Mean Age NR (Range 50-75 years) Female 60% Black 65% Medicare or private insurance >80% **Time Horizon:** August 2016 and April 2017	incremental cost per patient successfully navigated. Type of screening test: Colonoscopy **Comparison:** Historic cohort of patients from UCMC who were scheduled to receive screening colonoscopies during the period from January to December 2016 and did not receive any navigation services		reporting, data, quality, and assessment **Source:** Program data **Quality:** Good		
Author (Year): Ladabaum et al. (2015) **Design:** Modeled **Cancer Types:** Colorectal **Economic Outcome:**	**Location:** Northeast ((Used inputs from New York City (Mount Sinai Hospital)) **Setting:** NA, simulated (Hypothetical cohort followed the race distribution of authors' PN study from Mount Sinai hospital) **Population:**	**Intervention:** For African American patients, the professional and peer PNs were African American. Three scripted phone calls. Reminder postcard and bowel preparation instructions mailed after first call. The calls assisted with scheduling, provided	**Incremental pct pt increase in colorectal cancer screening versus control:** 25% (increase from 40% without PN to 65% with PN)	**Intervention cost per additional person screened:** $2422 (PN), $2558 (without PN), 2814 (No screening) **Components of**	**NR**	**Net cost per patient** -$173 **Incremental QALY gained** 0.014 Patient navigation intervention was dominant strategy because it was cost-

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Cost per Life Year Gained **Funding Source:** NCI and Icahn SOM (Mount Sinai) **Monetary Values:** 2012 U.S. dollars.	Informed with inputs from navigation studies in New York City (unscreened individuals ≥50 years) **Sample Size:** Intervention: 10,000 hypothetical cohort Control: NA **Characteristics:** Age: 57% (50-59 years), 33% (60-69 years), 9% (70-79 years), 1% (80 years) African American 43% Hispanic 49% White 4% Other 4% Rural 0% **Time Horizon:** Simulation over 50 to 100 years or death.	education about CRC, queried and addressed patient concerns, provided information about preparations before procedure, reminded about appointment, queried about receipt of mailed instruction, and assessed transport needs. For non-African American patients, only 1 arm addressed patient barriers. Type of screening test was colonoscopy. **Comparison:** No navigation	for one-time colonoscopy screening. **Data Source:** Base case from Mount Sinai hospital before availability of PN and observed uptake from earlier studies.	**intervention cost:** Navigation plus screening costs **Source:** Derived from Medicare reimbursement rates and estimated CRC care costs. **Quality:** Good		saving and increased QALY.
Author (Year): Lairson et al. (2018) **Design:** Quasi-experimental with a Control Group **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost	**Location:** El Paso, Texas, USA **Setting:** Clinic-Community (ACCION program was a community-wide service and research program designed to educate and facilitate colorectal cancer screening compliance) **Population:** 50 to 75 years old, due for colorectal cancer screening, self-reported Texas address, and uninsured without rectal	**Intervention:** Against Colorectal Cancer in Our Neighborhoods (ACCION) intervention consisted of education, navigation, and provision of no-cost colorectal cancer screening and diagnostic testing, if needed and delivered to participants 50 to 75 years old who were due for screening, were uninsured, and had a Texas address,	**Incremental pct pt increase in colorectal cancer screening versus control:** 65% to 77% (The interventions achieved screening rates of between 75% and 87% compared to	**Intervention cost per person:** The cost per participant ranged from $73 for group sessions to $93 for the individual video sessions with video and promotora **Intervention cost per**	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Funding Source: Cancer Prevention and Research Institute of Texas **Monetary Values:** 2012 U.S. dollars.	bleeding in the prior 3 months recruited by "promotoras" (navigators) who visited partnering clinic waiting rooms and community sites **Sample Size:** Intervention: 467 (Video 160; Promotora: 148; Video + Promotora: 159) Control: 317 **Characteristics:** Mean Age NR (More than 90% of the participants were younger than 65 years) Hispanic 100% (90.3% born in Mexico) Uninsured 100% Medicare or private insurance >80% **Time Horizon:** August 2016 and April 2017	randomized to promotora, video, or promotora and video interventions. Type of screening test: FIT and Colonoscopy **Comparison:** The concurrent comparison group was from a similar county in Texas.	10% in the comparison group). **Data Source:** Self-reported data confirmed with program database	**additional person screened:** Compared to the no cost controls, the cost per additional person screened in the video only group was $105.41 (CI: $91.18, $128.77). Moving from the Video in the group session to the Promotora in the individual session, the ICER was $268.12 (CI: $266.12, $273.42) **Components of intervention cost:** Navigation plus screening costs **Source:** Program data **Quality:** Good		

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Author (Year): Percac-Lima et al. (2009) **Design:** RCT **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** Massachusetts General Hospital, Jane's Trust, National Cancer Institute, Massachusetts Cancer Prevention Community Research Network **Monetary Values:** Assumed reported in 2007 U.S. dollars.	**Location:** Chelsea, Massachusetts, USA **Setting:** Health Center **Population:** Patients 52-79 years of age not up to date with CRC screening. **Sample Size:** Intervention: 409 Control: 814 **Characteristics:** Mean Age 63 years Female 60% African American 5% Hispanic 40% Asian 2% White 50% Other 5% Medicaid 3% Medicare 27% Non-English speakers 40% Rural 0% **Time Horizon:** 1-year study in 2007. 9-month intervention.	**Intervention:** Culturally tailored intervention by outreach worker for colonoscopy among low income and non-English speaking patients in Massachusetts General's Chelsea healthcare center. Patients received an introductory letter with educational material followed by phone or in-person contact by a language-concordant individually tailored intervention. Activities included patient education, procedure scheduling, translation and explanation of bowel preparation, and help with transportation and insurance coverage. Type of screening test was colonoscopy. **Comparison:** No navigation.	**Pre to post incremental over control for colonoscopy:** 11.2 pct pt **Additional person screened:** 45.8 **Data Source:** Program records	**Annual intervention cost per person:** $171 **Intervention cost per additional person screened:** $1,528 **Components of intervention cost:** Navigator wages, training **Source:** NR **Quality:** Good	**NR**	**NR**
Author (Year): Percac-Lima et al. (2014) **Design:**	**Location:** Chelsea, Massachusetts, USA **Setting:** Health Center – primary care	**Intervention:** Patient navigation program for Chelsea Healthcare Center (CHC). Navigators were Latino and Serbo-	**Pre to post incremental screening over control** was 8.9 pct pt for all and 10.8	**Annual total intervention cost:** $75,000	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Pre to post with control **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** Massachusetts Cancer Prevention Community Research Network, Trefler Foundation, Agency for Healthcare Research and Quality **Monetary Values:** Assumed reported in 2008 U.S. dollars.	**Population:** Patients in Chelsea Health Center (CHC) who are overdue for CRC screening. **Sample Size:** Intervention: 3,115 Control: 43,905 **Characteristics:** Mean Age 61.4 years Female 57.1% African American 5.2% Hispanic 39.5% Asian 1.8% White 49.6% Other 4.0% Medicaid 17.5% Medicare 33.0% Uninsured 10.9% Rural 0% **Time Horizon:** Data from 1-year pre in 2006 with 4-year follow-up to end of 2010.	Croatian, English-speaking and college educated. Also staffed by trained language translators. Patients sent initial letter plus educational materials in native language, followed by navigator call or in-person meeting at clinic, with 7 attempts over 3 months. Initial meeting covered education about CRC screening and exploration of barriers. Further tailored interventions reviewed all testing methods, help with appointment scheduling, review of bowel preparation, organizing transport, and accompanying patient to procedure where family unavailable. Navigator encouraged colonoscopy among the tests and entered results into medical records. Type of screening test was colonoscopy. **Comparison:** Primary care with no navigation.	pct pt for Hispanics. Adjusted pre to post incremental screening over control: 1.9 pct pt for all and 3.7 pct pt for Hispanics. **Data Source:** Program records	**Annual intervention cost per person:** $171 **Intervention cost per additional person screened:** $1,267 for all patients $651 for Hispanic patients **Components of intervention cost:** Navigator wages, training **Source:** NR **Quality:** Good		

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Author (Year): Qian et al. (2020) **Design:** Pre to post **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** Centers for Disease Control and Prevention **Monetary Values:** Reported in 2014 U.S. dollars.	**Location:** New York, New York, USA **Setting:** Health Center **Population:** Eligible patients of health center identified as not up to date on CRC screening. **Sample Size:** Intervention: 3,723 **Characteristics:** Mean Age 57.5 Female 64% Asian 97.5% Other 2.5% Medicaid 31.3% Uninsured 57.1% Mandarin/Cantonese 97.0% Rural 0% **Time Horizon:** June 30, 2012 through May 31, 2015.	**Intervention:** Two PNs employed by health center focused on Chinese American population in NYC areas of Flushing, Lower Manhattan, and Queens. CRC-specific training and workshop. PNs maintained database of patient characteristics, barriers, whether screening pursued, type of screening chosen. PNs worked with healthcare center staff to update electronic medical records. Other staff included program manager/coordinator, and internal medicine chief. PN activities were patient education on CRC and navigating and advocating for health system resources, completing paperwork, referrals for uninsured for free colonoscopy, and access to culturally competent physician. Type of screening test was colonoscopy or FIT. **Comparison:** None	**Number of persons screened:** 2,552 **Data Source:** Navigation tracking system	**Total intervention cost over 3 years** $295,297 **Intervention cost per patient** $79.31 **Intervention cost per person screened:** $115.71 **Components of intervention cost:** Salary and benefits, supplies, colonoscopy preps, patient transportation. **Source:** State budget data and navigation program records. **Quality:** Good	**NR**	**NR**

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
Author (Year): Rice et al. (2019) **Design:** Modeled from Trial **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost **Funding Source:** None **Monetary Values:** Reported in 2012 U.S. dollars.	**Location:** New Hampshire, USA **Setting:** Endoscopy centers and community **Population:** Referred by primary care or self-referred. **Sample Size:** Endoscopy centers 131 Public health program 443 Control 75 **Characteristics:** Age: 50-59 years 82.4%, 60-64 years 17.6% Female 62.6% African American 5.3% Hispanic 24.4% Asian 21.4% White 61.1% Other 0.8% <250% of FPL 100% Urbanicity Mixed **Time Horizon:** 15 months from start of program in 2009.	**Intervention:** Two interventions modeled for New Hampshire Colorectal Cancer Screening Program (NHCRCSP) with Nurse PNs within endoscopy centers statewide and as a statewide public health program. Means-tested free colonoscopies. Supported by endoscopist, registered nurse for management, program director, and secretary. PNs worked for NHCRCSP and external to clinics. All navigation by telephone including translation. Patients referred by PCPs or self-referred. Eligible patients referred to a geographically convenient endoscopy center and PN. Protocol covered: obtain agreement, confirm appointment, establish rapport, assess barriers; review bowel preparation and materials and confirm transport and patient escort; review bowel preparation in detail and remaining barriers; re-confirm appointment details and address	**Incremental Screening** From the trial, completion rates were 69.4% usual care and 96.2% in intervention starting from 0%. **Data Source:** Trial records	**Navigation cost per patient** Endoscopy center scenario $231. Public health program scenario $275 **Intervention cost per additional colonoscopy completed:** Endoscopy center scenario $548 Public health program scenario $725 **Components of intervention cost:** Navigator wages, start-up costs, training, supplies, technology, colonoscopy. **Source:** PN program cost from NHCRCSP **Quality:** Good	**NR**	**Reimbursement per colonoscopy:** $737 **ROI:** Endoscopy center scenario 34.5% Public health scenario 1.7% **Quality:** Good

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
		remaining barriers; evaluate colonoscopy experience; go over results. Type of screening test was colonoscopy. **Comparison:** Usual care for coloscopy (mailed information, reminders, bowel preparation materials).				
Author (Year): Wilson et al. (2015) **Design:** Modeled **Cancer Types:** Colorectal **Economic Outcome:** Cost per Life Year Gained **Funding Source:** Cancer Prevention and Research Institute of Texas **Monetary Values:** 2013 U.S. dollars.	**Location:** San Antonio, Texas **Setting:** University Health System, Bexar County **Population:** PN contacted eligible members (50 years or more, Male, CareLink member, didn't have CRC screening in last 10 years) **Sample Size:** Intervention: 461 Control: NR **Characteristics:** Age: NR; initial age 50 years Male: 100% Hispanic 100% Uninsured 100% **Time Horizon:**	**Intervention:** (1) no-cost screening colonoscopy referrals for Hispanic men 50 years of age and older, (2) program navigation provided by bilingual patient navigators, (3) open-access endoscopy through the removal of system barriers and assisted transportation, and (4) colonoscopy services provided by a bilingual, male Hispanic surgeon. Type of screening test was colonoscopy. **Comparison:** Usual care for Hispanic men in CareLink	**Incremental pct pt increase in colorectal cancer screening versus control:** 25% (increase from 40% without PN to 65% with PN) for one-time colonoscopy screening. **Data Source:** Base case from Mount Sinai hospital before availability of PN and observed uptake from earlier studies.	**Intervention cost per person:** $399.91 **Intervention cost per additional person screened:** $498 **Components of intervention cost:** Salaries, travel, and other costs **Source:** Navigator Program **Quality:** Good	**NR**	**Incremental cost** - $1,148 per patient and QALY increase of 0.31 per patient indicating that the PN is the dominant strategy.

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
	Simulation of disease progression, detection and treatment over a 40-year period starting at age 50.					
Author (Year): Wolf et al. (2015) **Design:** Modeled **Cancer Types:** Colorectal **Economic Outcome:** Intervention cost and healthcare cost averted **Funding Source:** Colorado Department of Public Health and Environment, University of Colorado. Program funded by Prevent Cancer Foundation. **Monetary Values:** Assumed reported in 2009 U.S. dollars.	**Location:** Colorado, USA **Setting:** Clinic-Community. **Population:** Lawfully present Colorado residents age ≥ 50 years below 250% of federal poverty line, uninsured, and in need of screening per American Cancer Society guidelines. **Sample Size:** Intervention: 13,744 received colonoscopy. **Characteristics:** **Age:** < 50 years 9%; 50-54 years 40%, 55-59 years 30%; 60-64 years 19%; ≥ 65 years 2% Female 62.0% African American 3.0% Hispanic 32.0% White 61.0% Other 3.0% Uninsured 100% < 250% of FPL 100% Urbanicity Mixed **Time Horizon:**	**Intervention:** Free colonoscopy or sigmoidoscopy. Clinic-based patient navigation and coordination of care. Training for providers and PNs. Navigator activities were: clinic in-reach, patient education, scheduling appointments, reminder call, and ensuring ride home after procedure. Navigator also followed-up about results and recommendations and assisted with coordinating treatment plan for abnormal results. Type of screening test was colonoscopy or sigmoidoscopy. **Comparison:** None	**Analysis based on colonoscopies completed.**	**Intervention cost per colonoscopy completed:** $1,475 **Components of intervention cost:** Navigator wages, colonoscopy, polyp removal, training, awareness and media, screening equipment. **Source:** Patient tracking data. **Quality:** Good	**Change in healthcare cost over 20 years:** $32 million **Components of intervention cost:** Colorectal cancer treatment cost. **Source:** Based on modeled 325 averted colorectal cancer cases. Assumed treatment cost of $100,000 per case. **Quality:** Good	**Authors report 20-year Averted healthcare cost/Cost of program** 1.34 (=$32.5 million/$24.3 million) **Quality:** Good

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Economic Summary Measure
	Implemented 2006-2008. Data from January 2006 through June 2012.					