

# PREVALENCE AND PREDICTORS OF YOUNG ONSET COLORECTAL NEOPLASIA: INSIGHTS FROM A NATIONALLY REPRESENTATIVE ENDOSCOPY REGISTRY

Trivedi PD, et al. Gastroenterology. 2022. PMID: 35007513

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**Steven H. Itzkowitz, MD**



Icahn School of Medicine at  
**Mount Sinai**



**AMSURG**



# Disclosures

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**Steven Itzkowitz, MD:**

**Exact Sciences Corp – advisory board, research support**

**Freenome – research support**

**Lina Jandorf, MA:**

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# Background

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Colorectal cancer (CRC) incidence in patients < 50 years old (“young-onset CRC”) **has nearly doubled since the early 1990s.**



Several US guidelines have recently lowered the age to begin CRC screening from 50 to 45 years old.

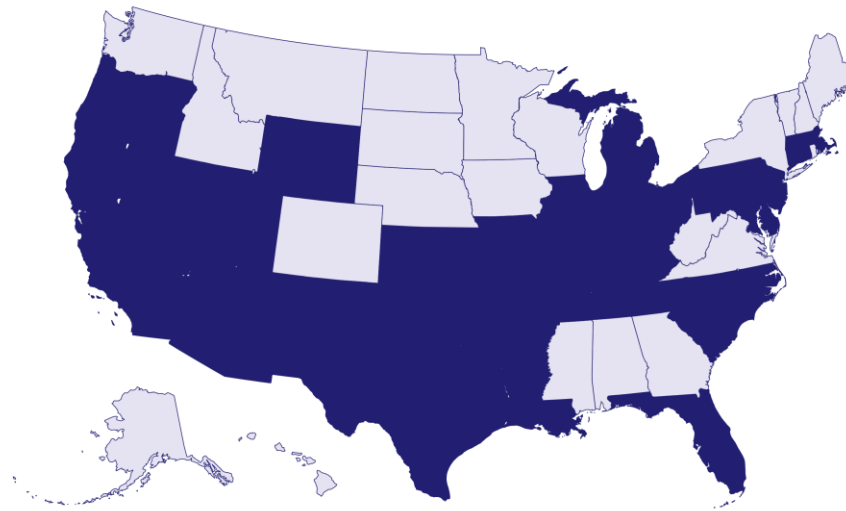


We asked: What is the **prevalence of colorectal neoplasia** in **individuals aged 45-49**, who will now get screened, as well as those even younger?

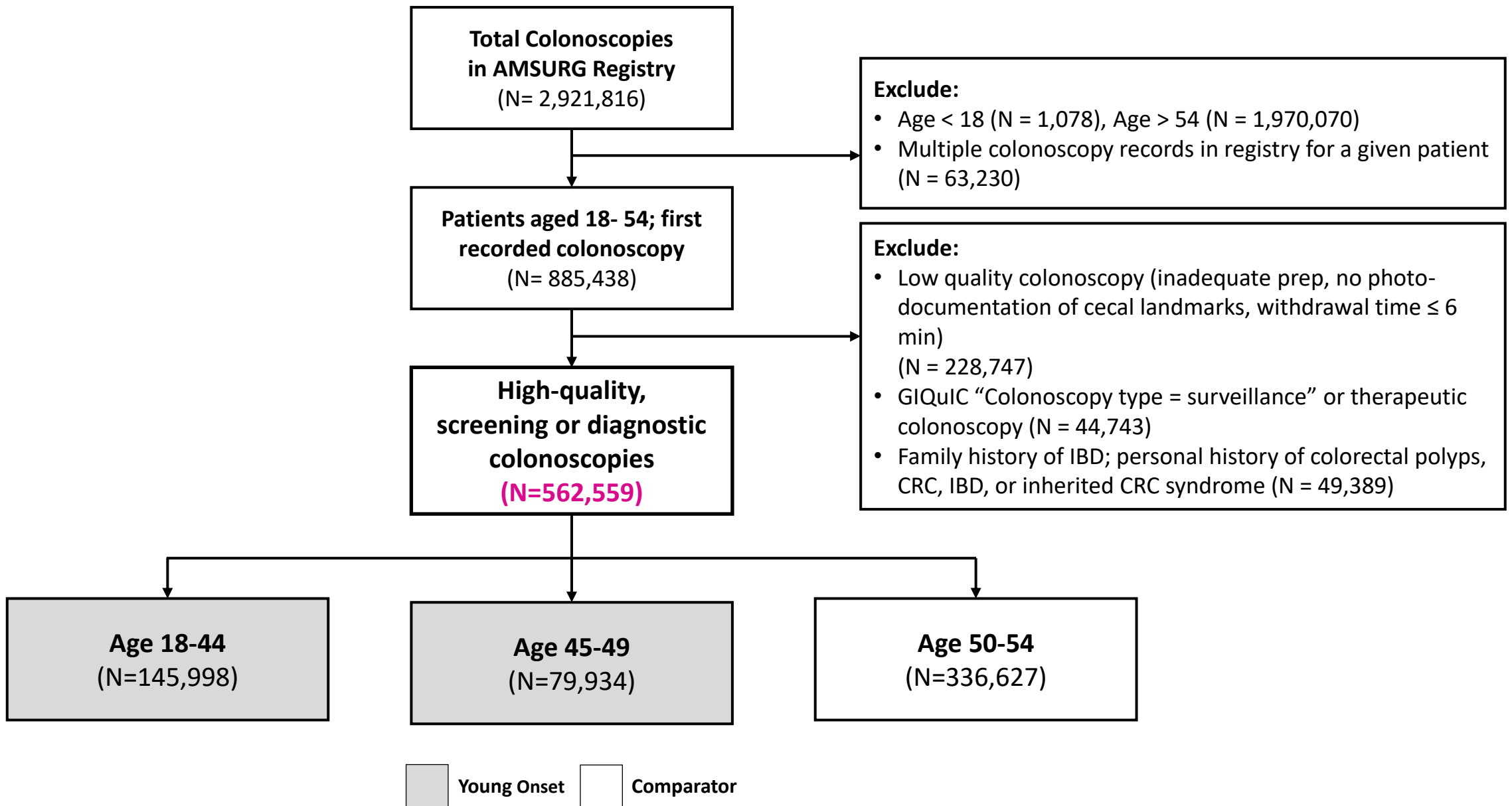
# Data Source and Study Cohort

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- AMSURG operates ambulatory surgical centers (ASCs) across the US.
- Present study: data from **123 ASCs** across **29 states** that use **GI Quality Improvement Consortium (GIQuIC)** standards
- Timeframe: **2014 - 2021**
- This dataset contains information on 2,921,816 colonoscopies.

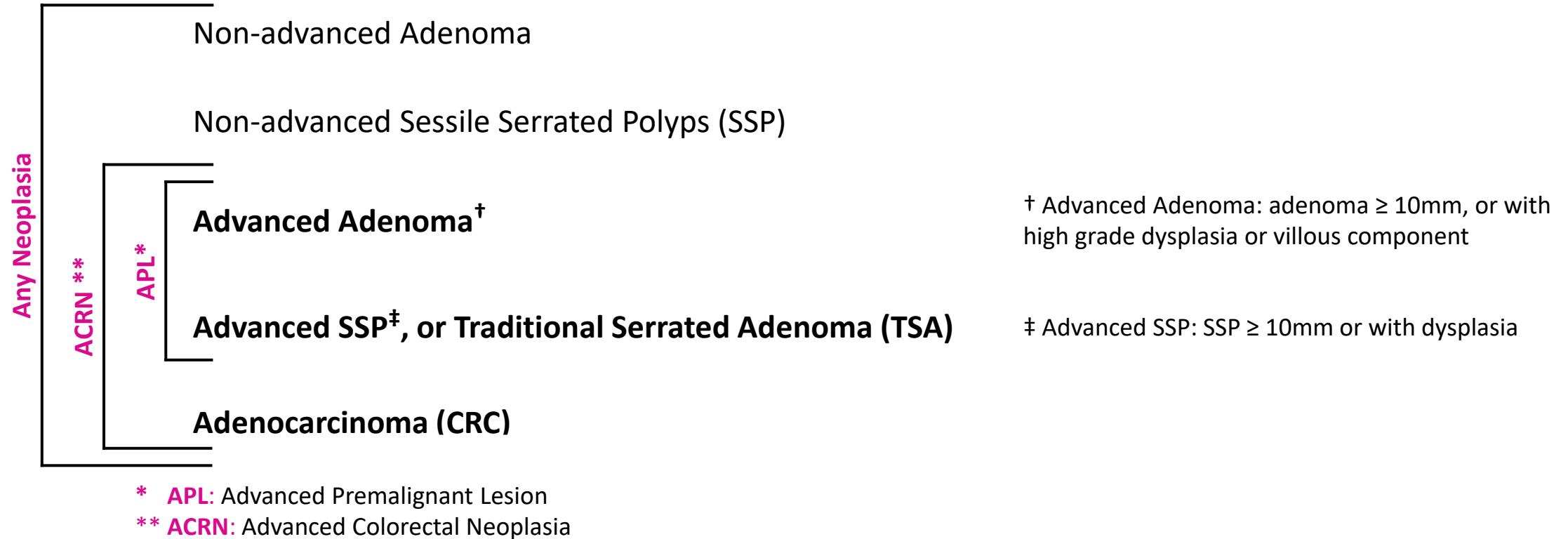


GIQuIC-reporting AMSURG ASCs: ■



# Definitions – Pathology Findings

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# Definitions

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## Family History (FH) definitions:

- Family History of CRC: First-degree relative (FDR) < 60 years old or 2 FDR at any age with CRC
- Family History of Polyp(s): FDR < 60 years old or 2 FDR at any age with advanced adenoma(s), FDR < 60 years old or 2 FDR at any age with SSP or TSA

**If both are present, only the highest degree of FH was considered (FH of CRC)**

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## Indication for Colonoscopy:

- “Diagnostic – Bleeding-Related” (Dg – Bld): frank blood in stool, melena, iron-deficiency anemia, and follow-up of stool-based screening tests\*
- “Screening” (Scr)
- “Diagnostic – Other” (Dg – Oth): all other indications (e.g. abdominal pain, diarrhea, constipation)

\* rarely done among patients < 50 in this cohort

# Aims

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## Among patients < 50 years old:

- Provide **prevalence estimates** for any neoplasia, APL, and CRC
- Provide **odds-ratio estimates** for **factors associated with ACRN (APL + CRC)** with a focus on the **45 – 49** and 40 – 44 age groups



# Statistical Methods

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- **Study variables:**
  - Age
  - Sex
  - Race
  - Ethnicity
  - Family History
  - Indication
  - Findings of Neoplasia
- **Predictors of ACRN (APL + CRC) were determined by logistic regression.**
  - Included all as covariates in initial model
  - Final model: removed a variable if not significant at  $\alpha = 0.05$

# Demographics

In this study population, more female patients underwent colonoscopy across all age groups.

Patient Characteristic	Patient Age Group - N (column %)		
	18 – 44 (N = 145,998)	45 – 49 (N = 79,934)	50 – 54 (N = 336,627)
<b>Sex</b>			
Female	87,053 (59.6%)	47,127 (59.0%)	181,797 (54.0%)
Male	58,945 (40.4%)	32,807 (41.0%)	154,830 (46.0%)
<b>Race</b>			
White	92,911 (63.6%)	47,694 (59.7%)	202,835 (60.3%)
African American	12,761 (8.7%)	10,042 (12.6%)	30,804 (9.2%)
Asian	4,368 (3.0%)	2,457 (3.1%)	11,093 (3.3%)
American Indian/Alaska Native	411 (0.3%)	197 (0.2%)	721 (0.2%)
Other/Unknown	35,547 (24.3%)	19,544 (24.5%)	91,174 (27.1%)
<b>Ethnicity</b>			
Hispanic/Latino	11,356 (7.8%)	6,141 (7.7%)	25,497 (7.6%)
Not Hispanic/Latino	75,259 (51.5%)	42,191 (52.8%)	175,407 (52.1%)
Unknown/Patient Declined	59,383 (40.7%)	31,602 (39.5%)	135,723 (40.3%)

# Demographics

Most patients were white, followed by African Americans, then Asians.

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# Demographics

7.6% of the cohort was Latino.

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# Family History

Compared to patients aged 50 – 54, there was a higher proportion of family history of CRC and polyps among patients younger than 50.

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<b>Family History*</b>			
Family History of CRC	10,674 (7.3%)	7,490 (9.4%)	10,946 (3.3%)
Family History of Polyp(s)	2,512 (1.7%)	2,084 (2.6%)	4,425 (1.3%)
<b>Indication</b>			
Diagnostic – Other	66,635 (45.6%)	24,541 (30.7%)	16,250 (4.8%)
Diagnostic – Bleeding	57,505 (39.4%)	22,295 (27.9%)	16,877 (5.0%)
Screening	21,858 (15.0%)	33,098 (41.4%)	303,500 (90.2%)

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If both: only highest degree considered (FH of CRC)

# Indication

**Among patients aged 50 - 54, 90% of procedures were performed for screening.**

Among patients aged 45 - 49, the most frequent indication was screening (41.4%).

Among patients aged 18 - 44, the most frequent indication was 'Diagnostic - Other' (45.6%).

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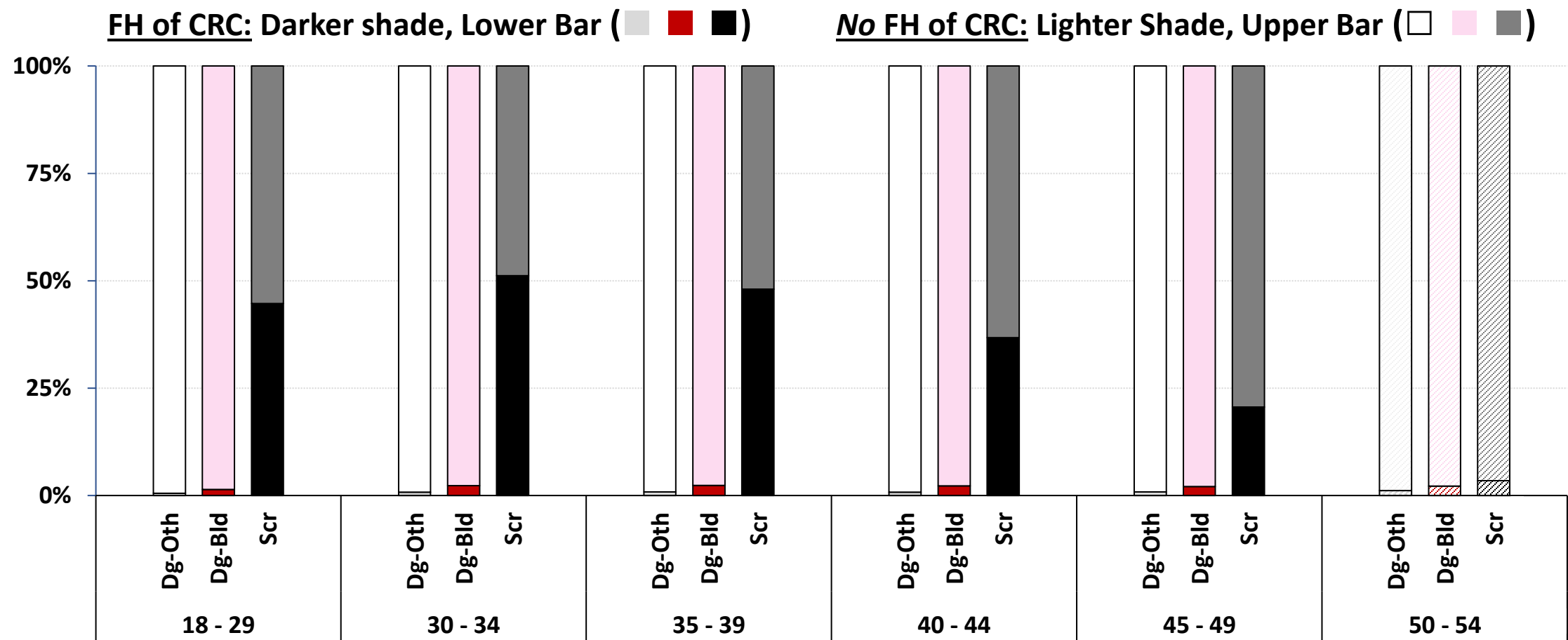
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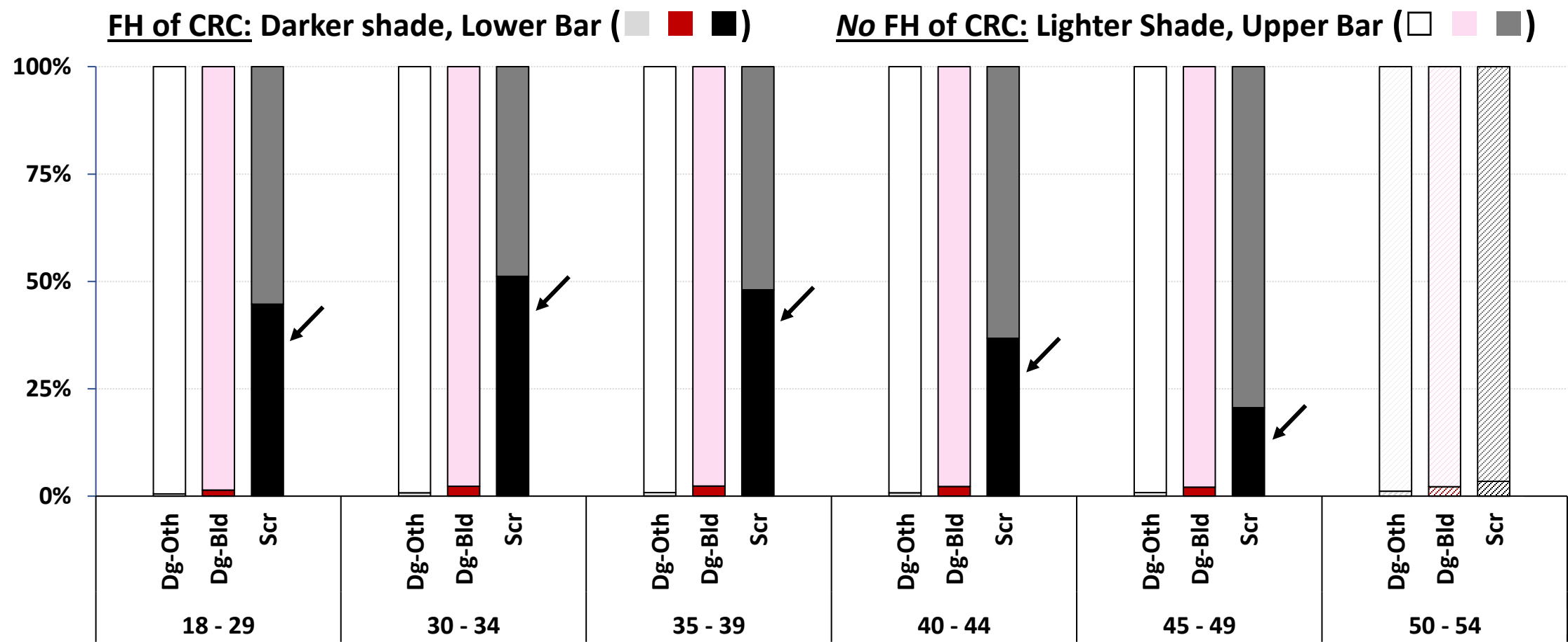
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For patients aged 18 - 49, family history of CRC was most prevalent among those undergoing screening colonoscopy.



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# Predictors of Early Onset ACRN (APL + CRC)

Predictor	Odds Ratio	95% CI	p
<b>Age</b>	1.08	1.07 – 1.08	< 0.01
<b>Sex</b>			
Female	<i>ref</i>	-	-
Male	1.67	1.63 – 1.70	< 0.01
<b>Race</b>			
White	<i>ref</i>	-	-
African American	0.76	0.73 – 0.79	< 0.01
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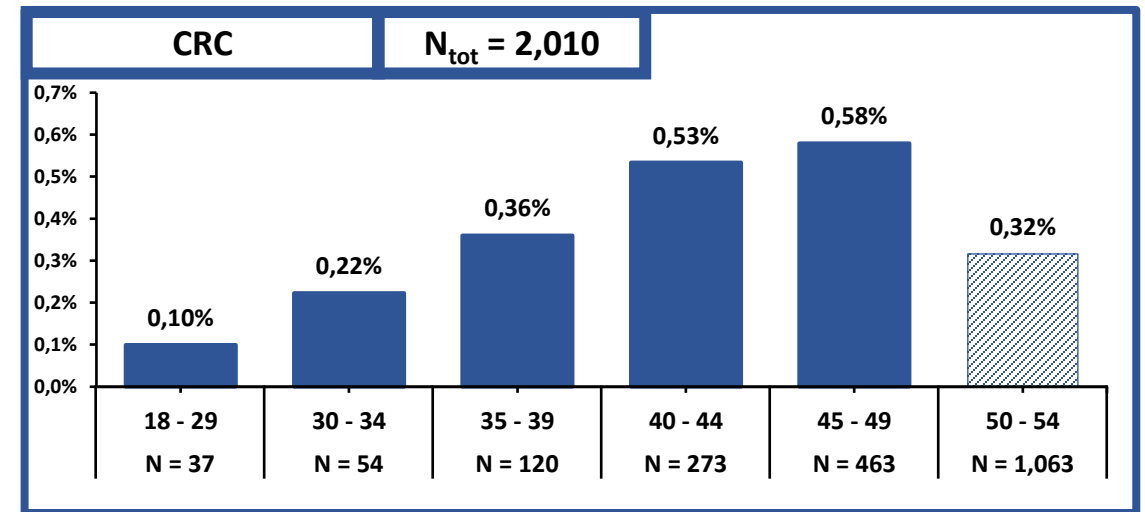
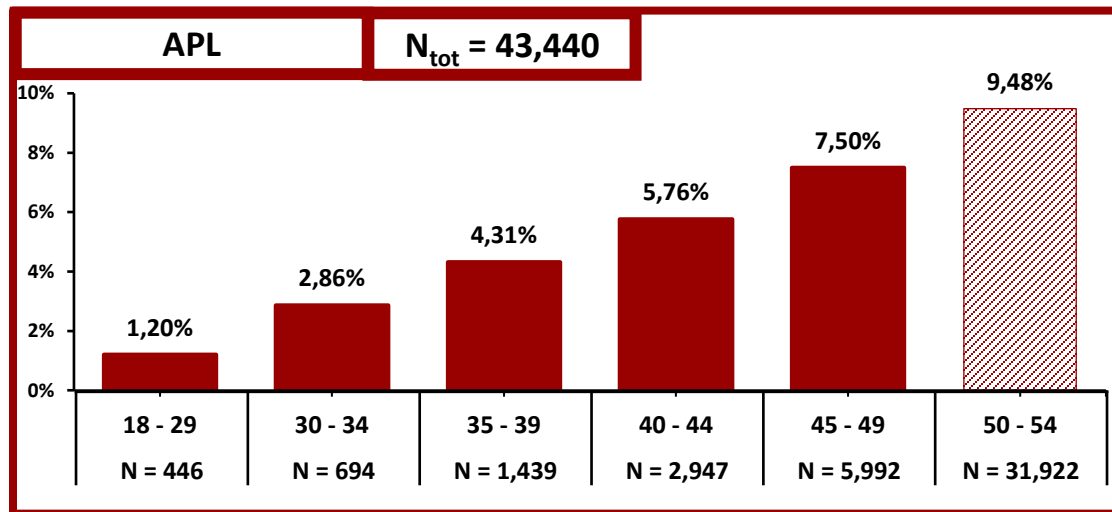
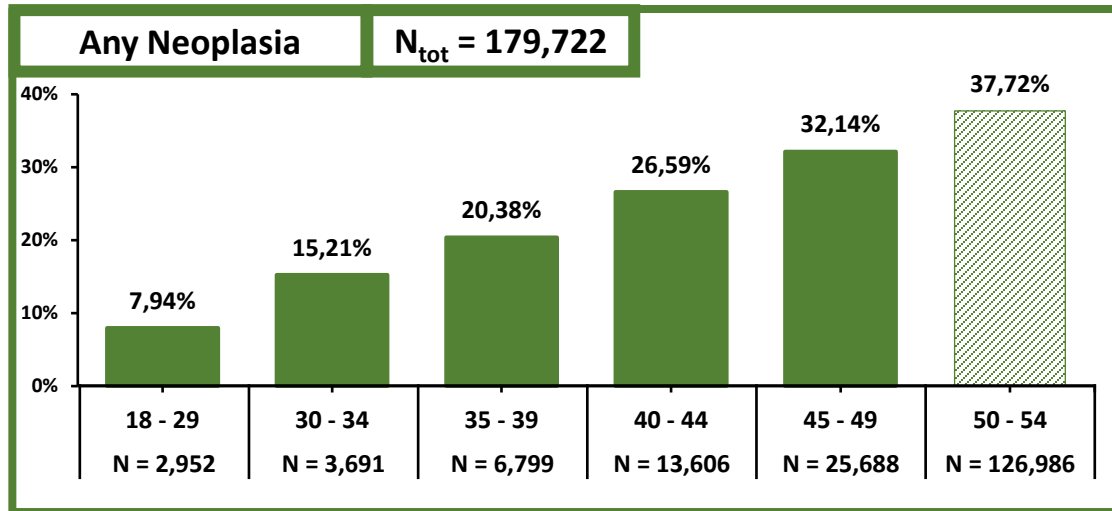


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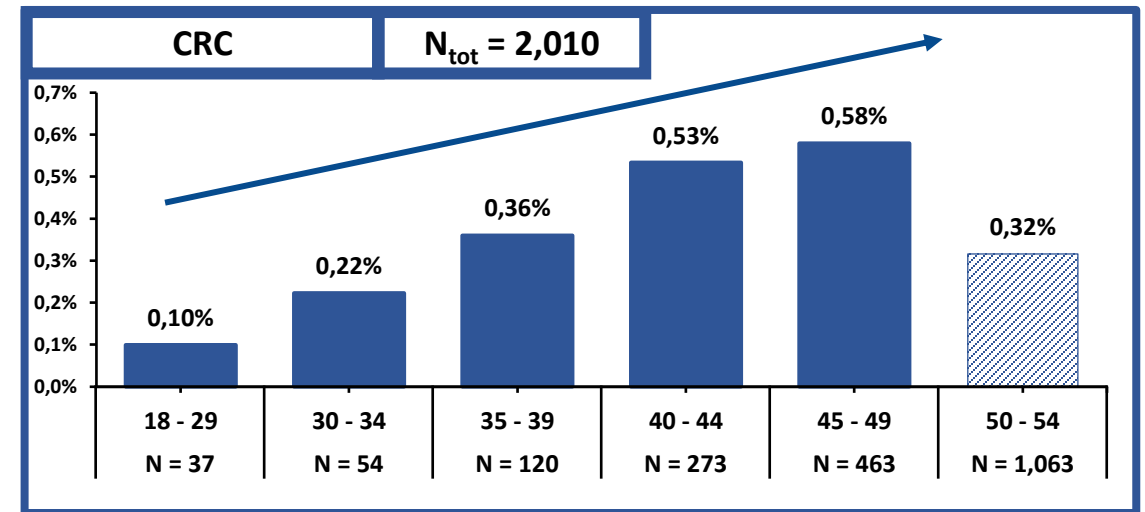
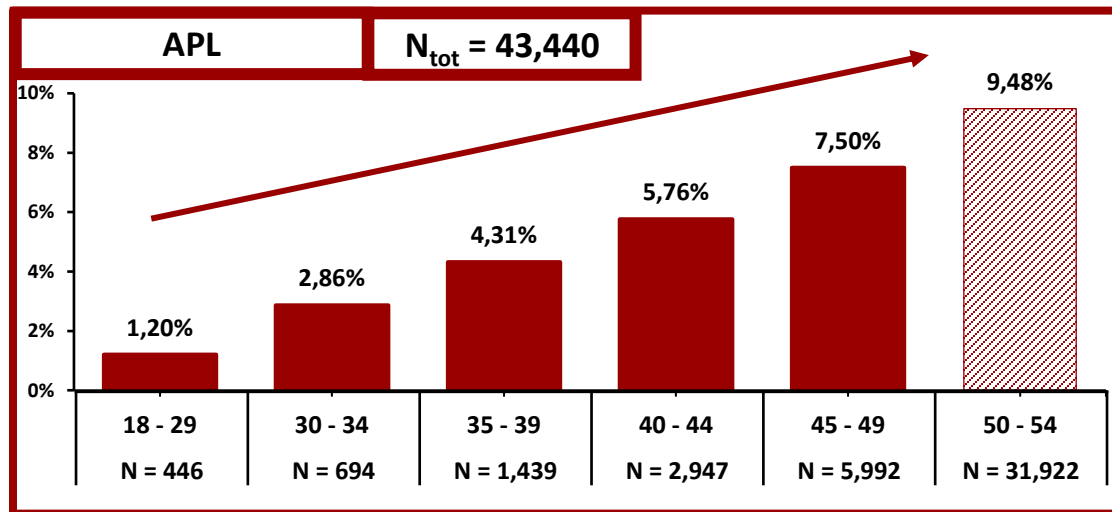
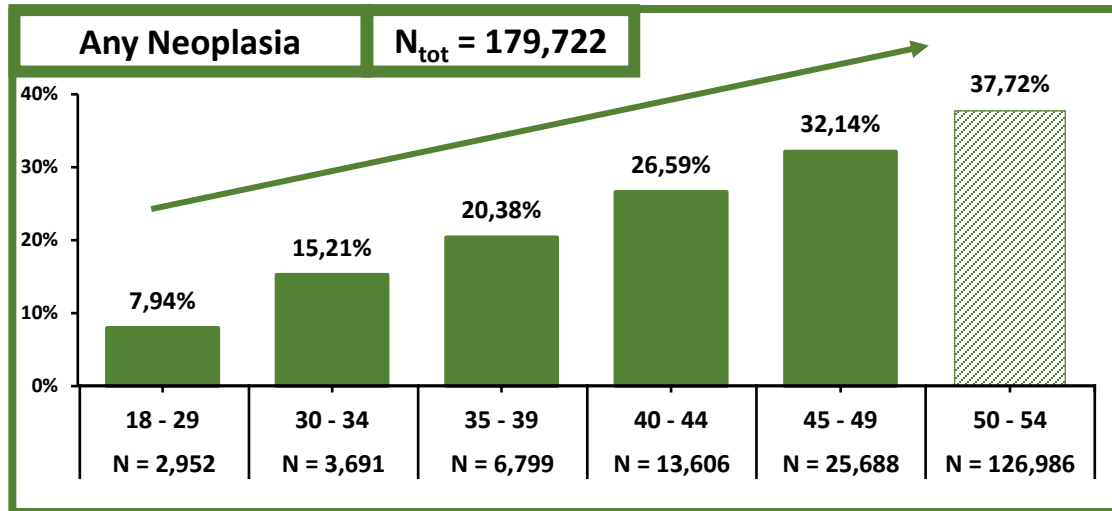
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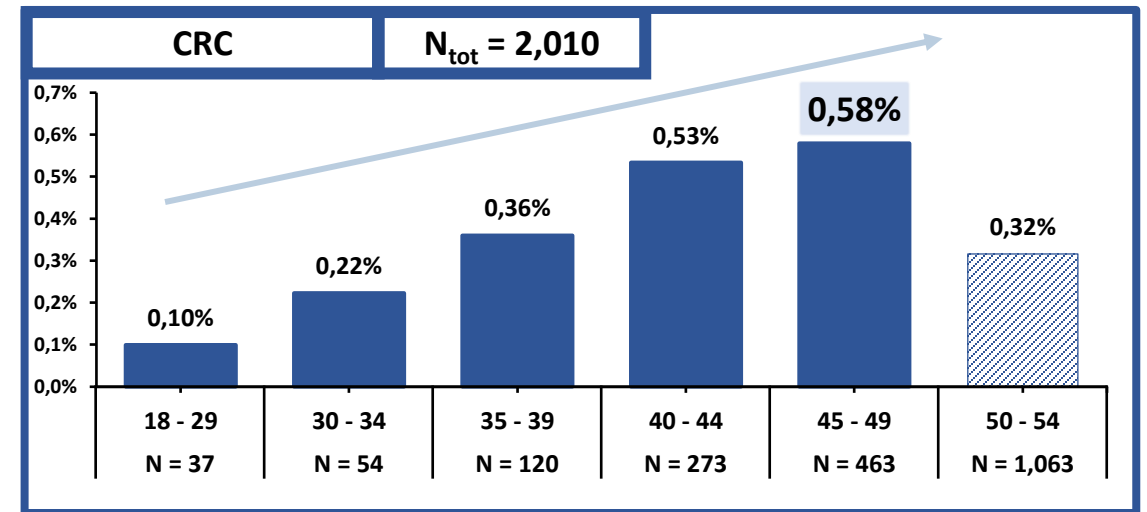
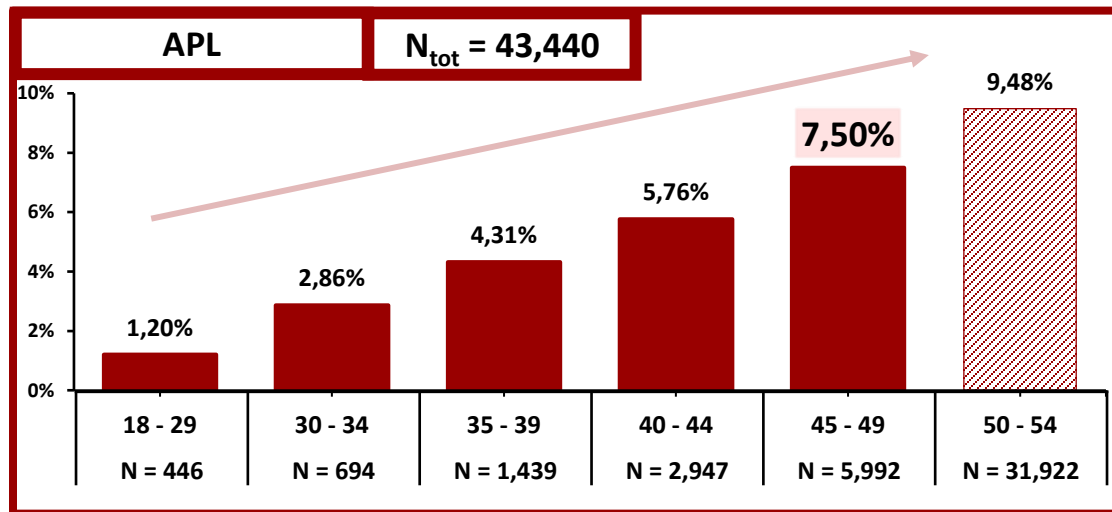
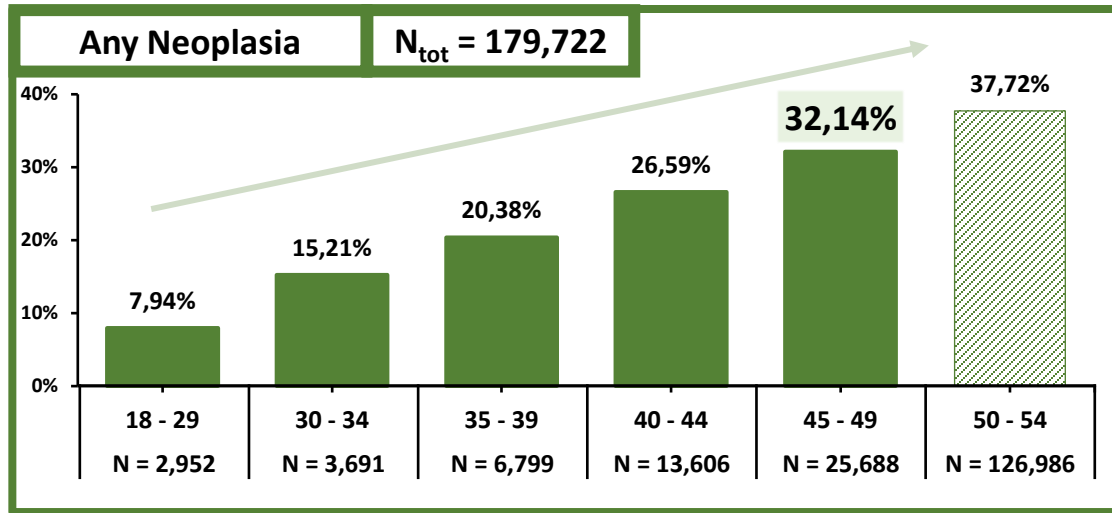
# Prevalence of Neoplasia by Age Group



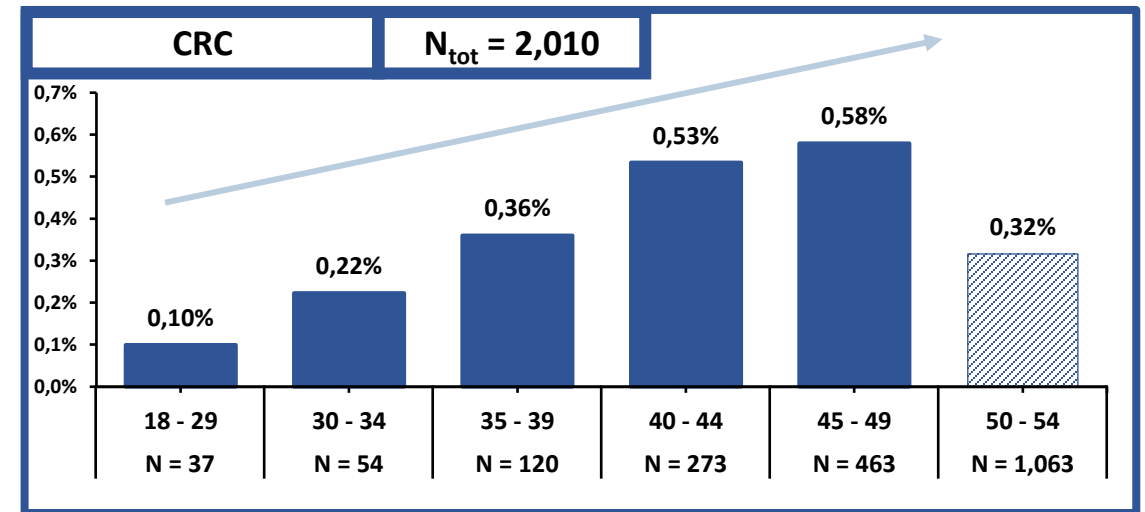
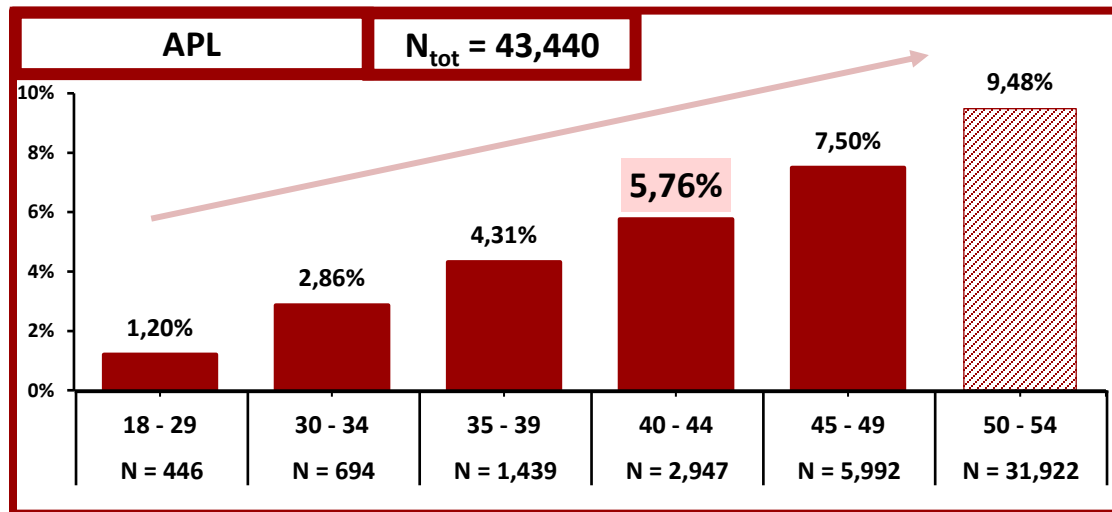
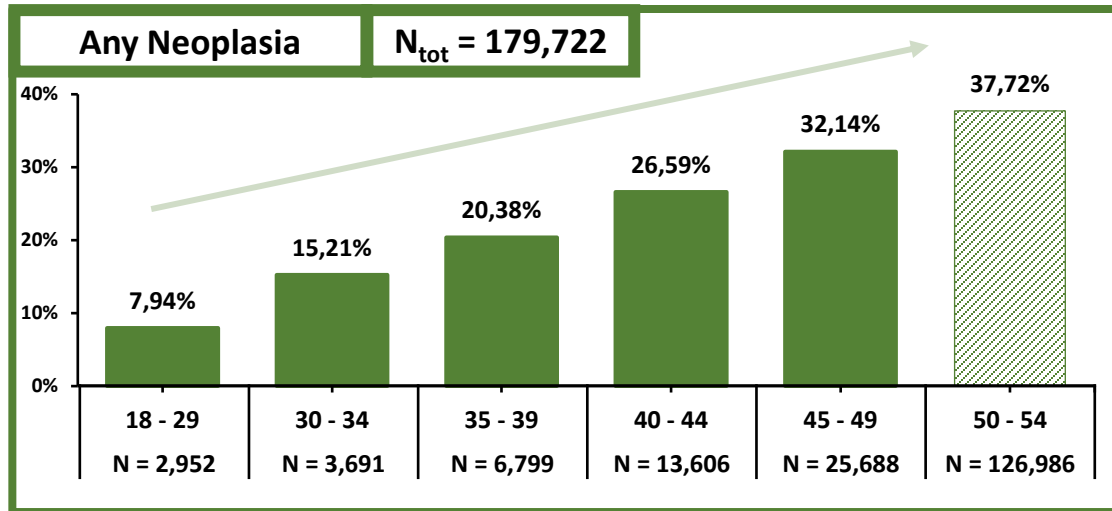
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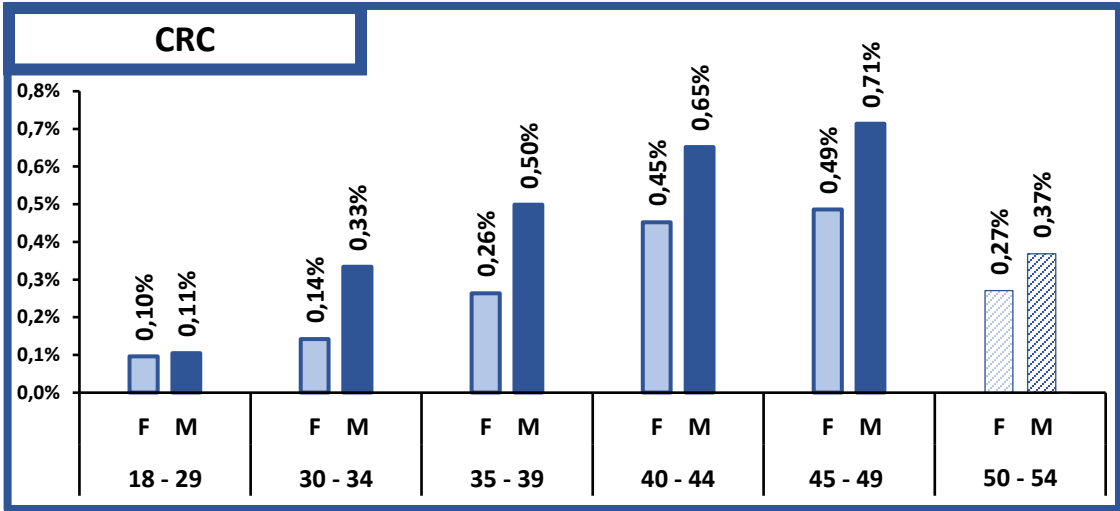
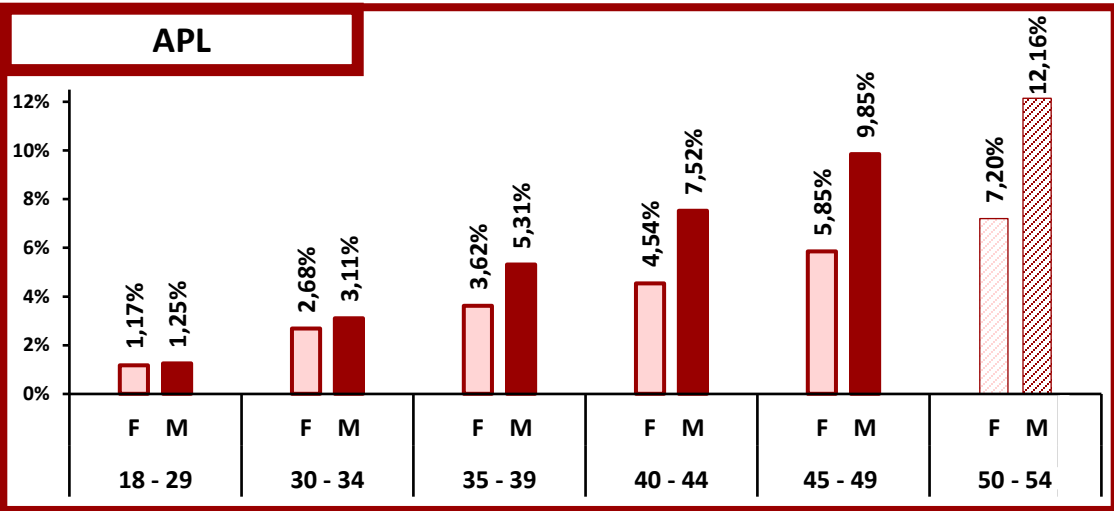
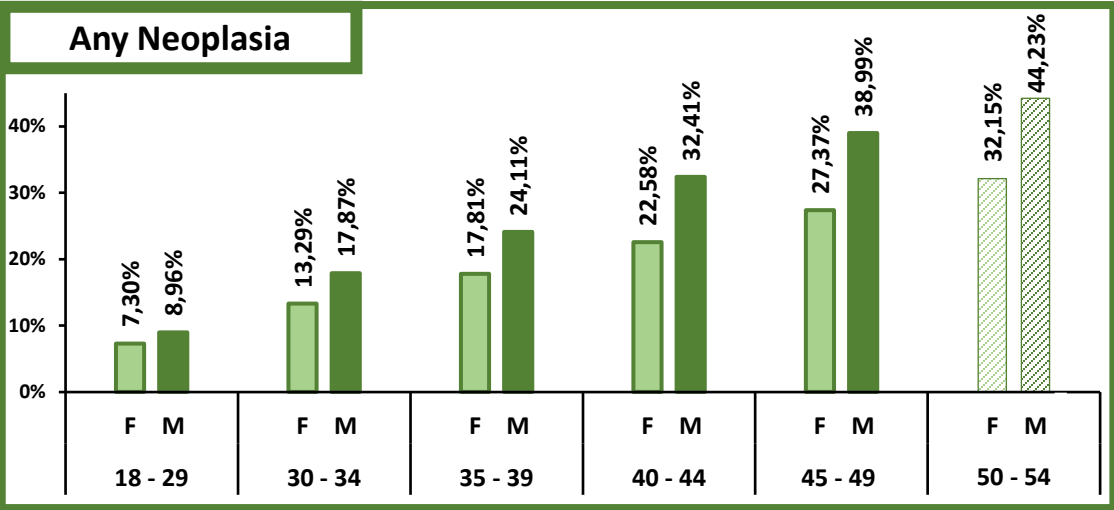
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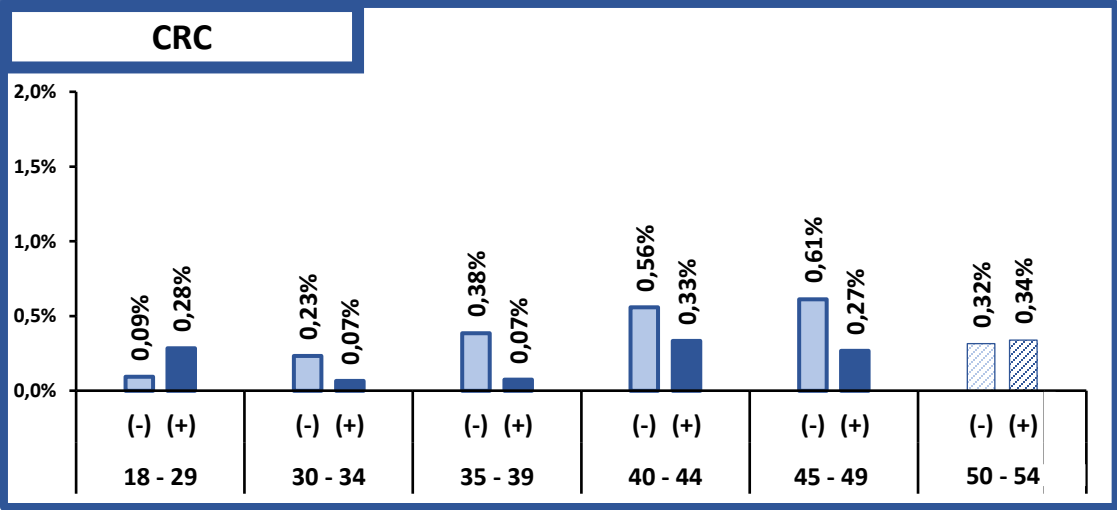
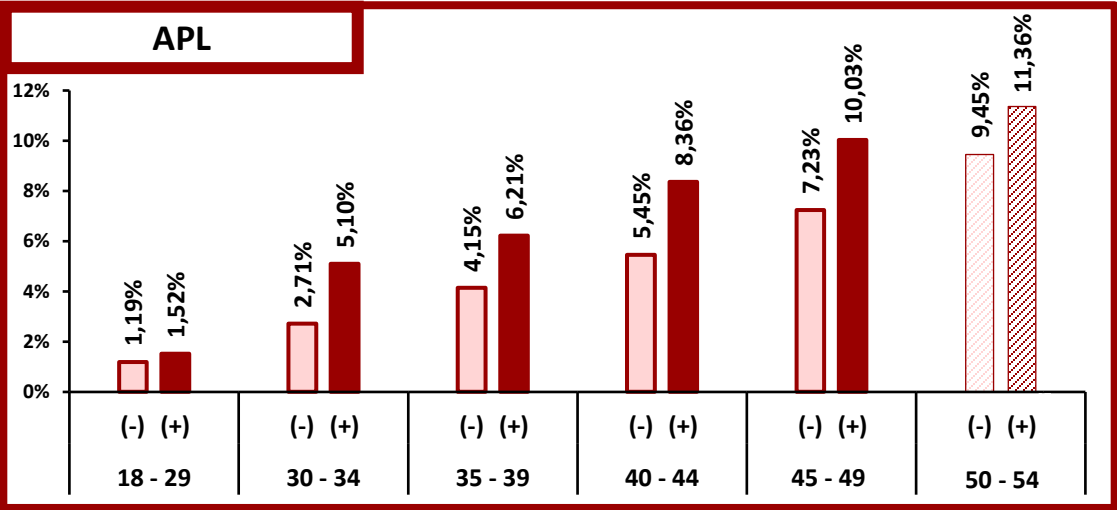
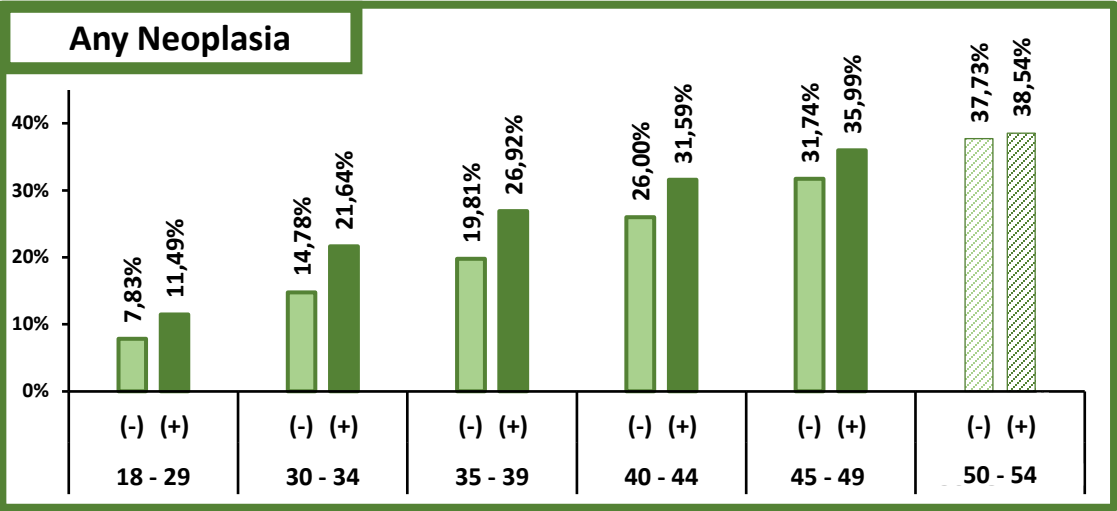
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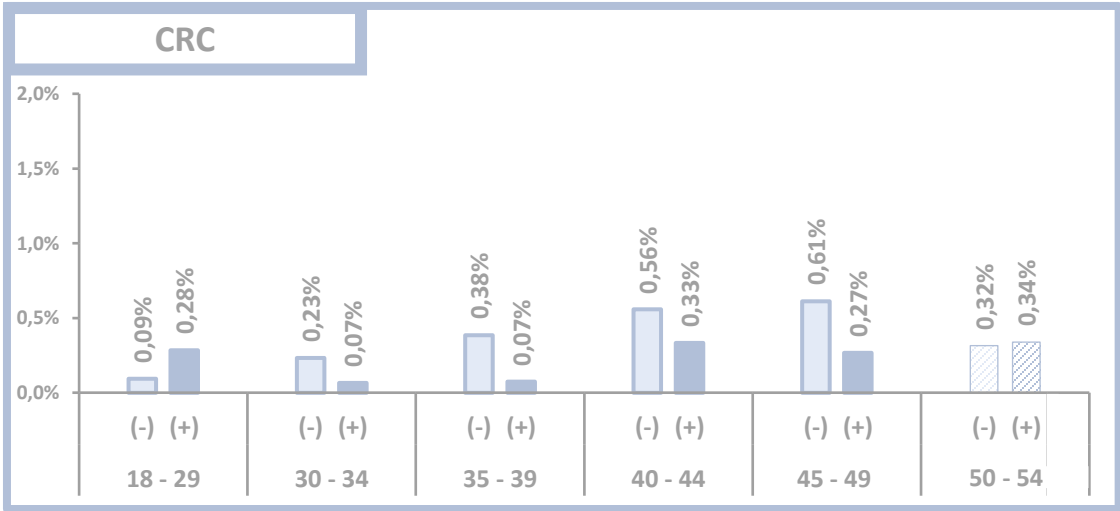
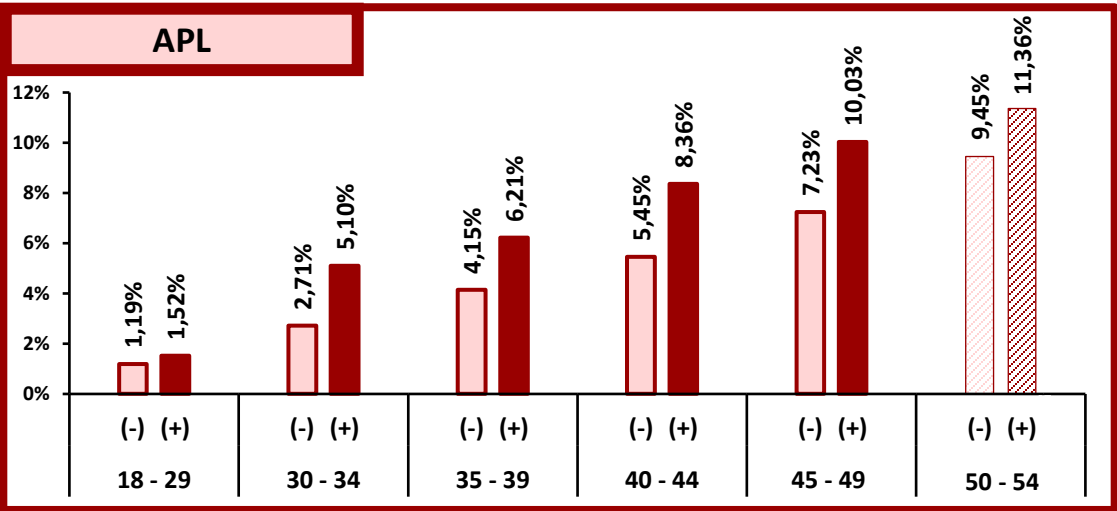
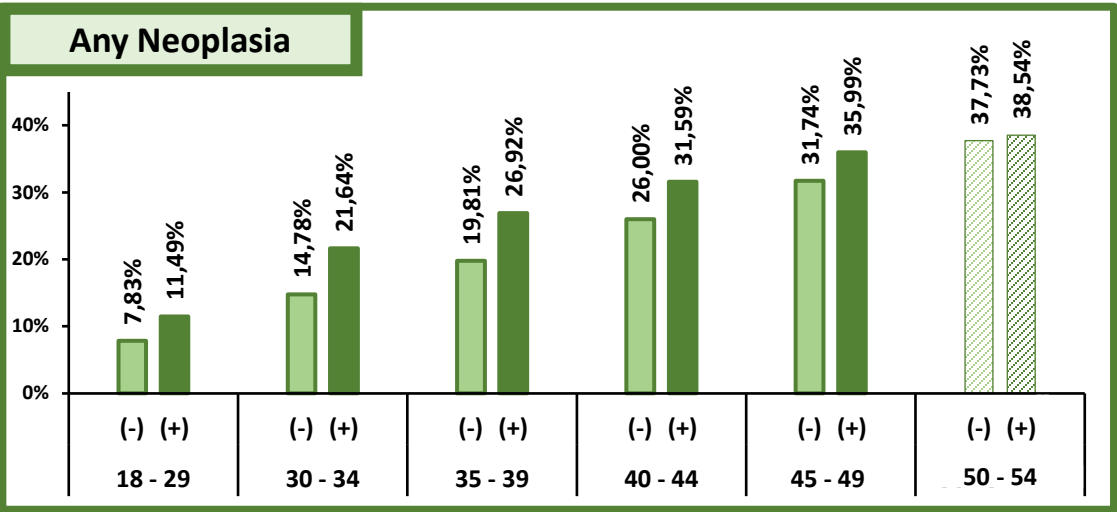
# Males: Higher Prevalence of Neoplasia



# Prevalence of Neoplasia: Effect of Family History of CRC

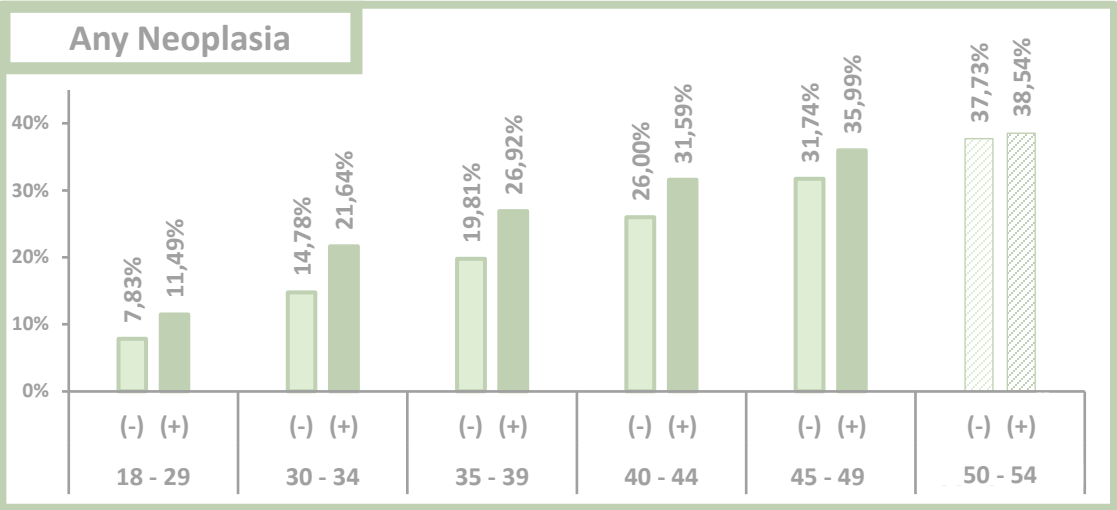


# FH of CRC: Higher Prevalence of Any Neoplasia, APL



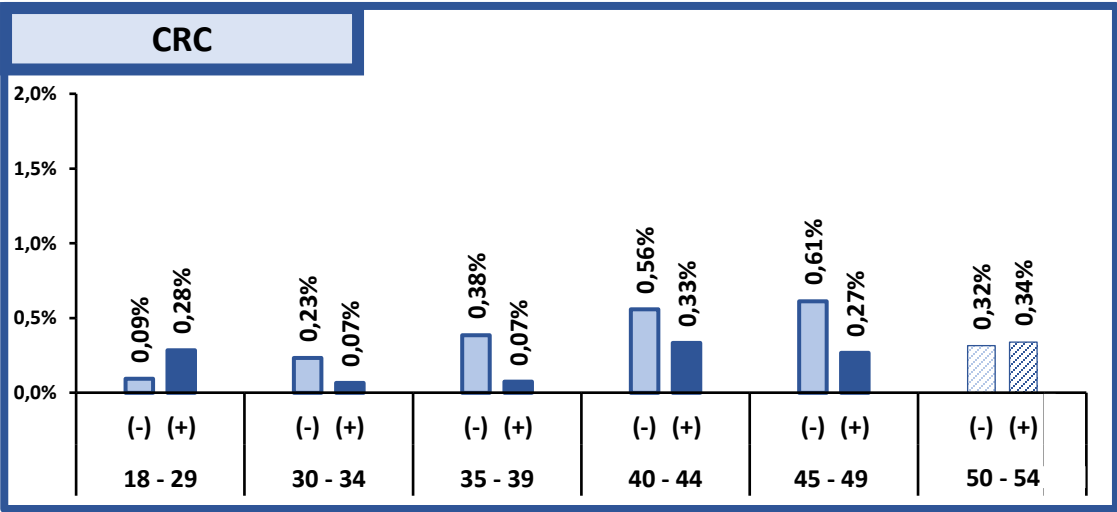
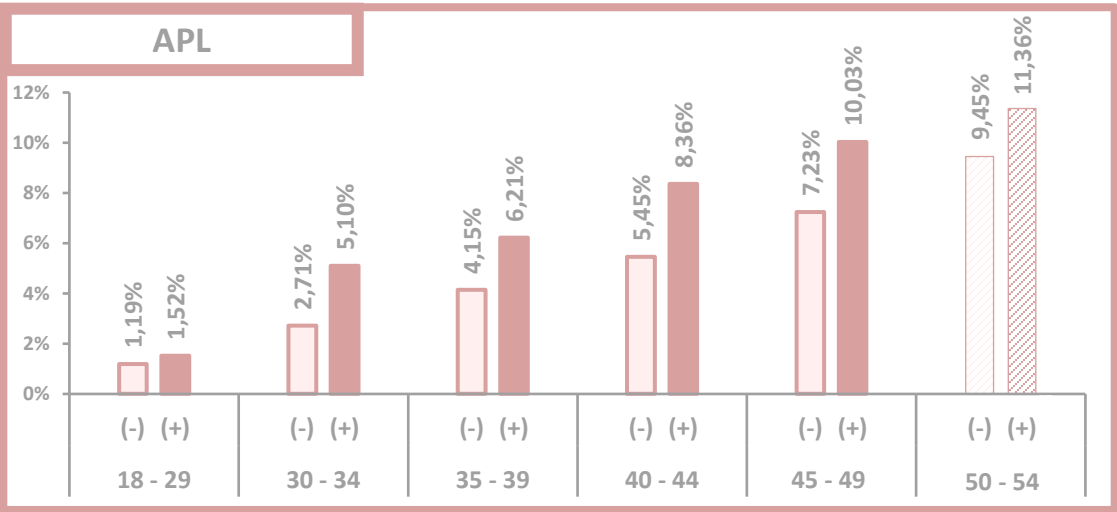


# FH of CRC: Lower Prevalence of CRC

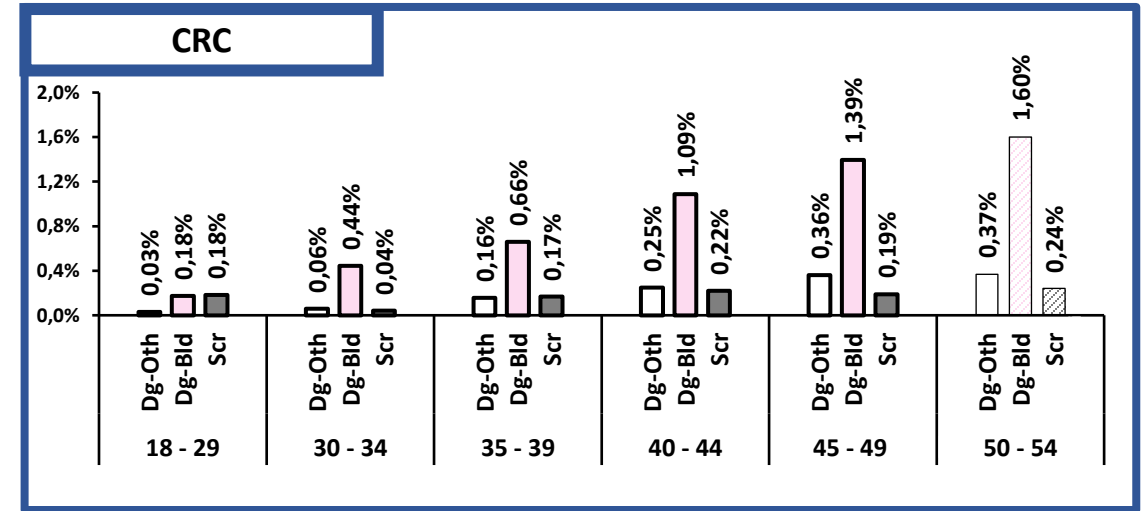
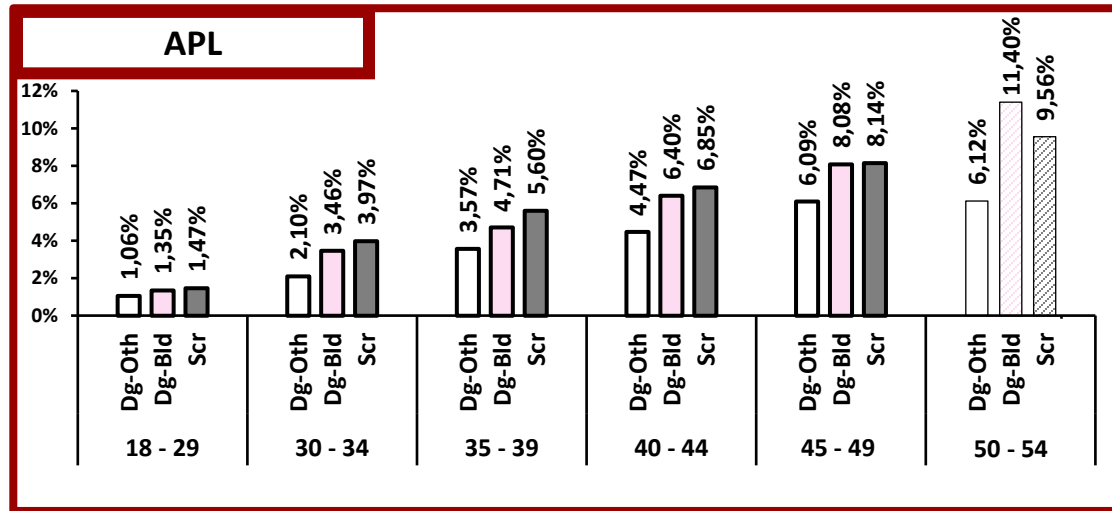
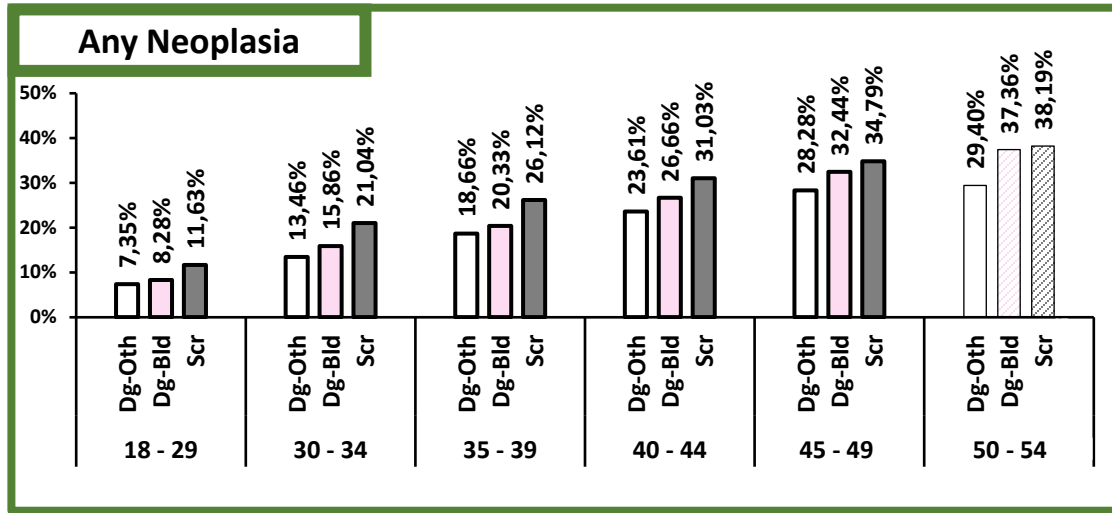


Recall: most patients aged 18 - 49 with a FH of CRC underwent colonoscopy for 'screening.'

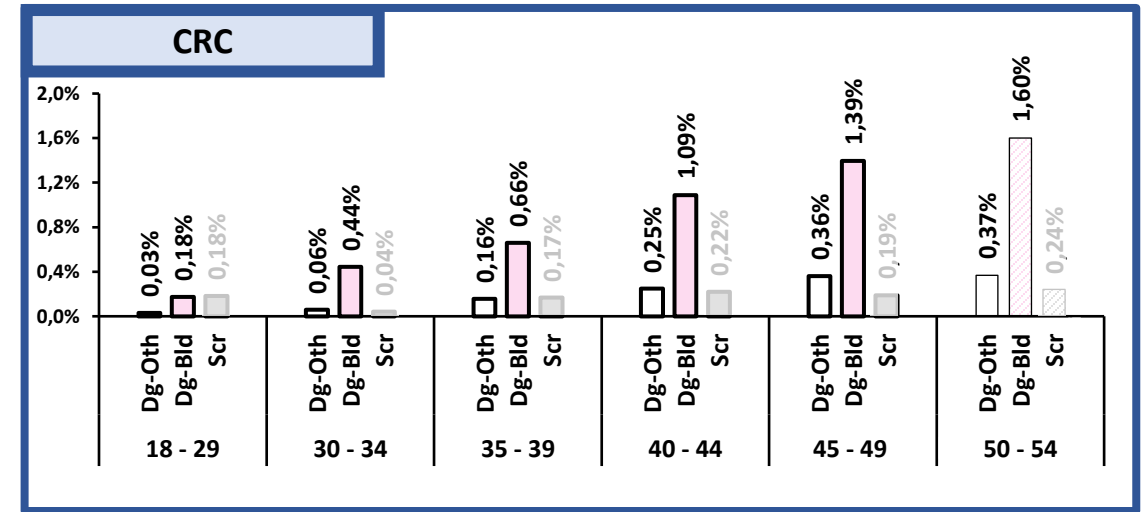
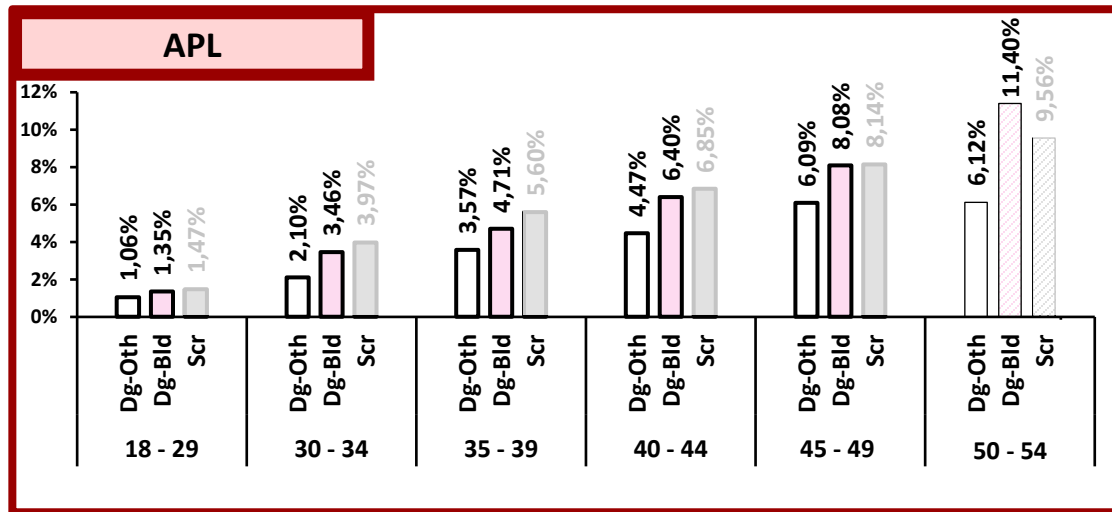
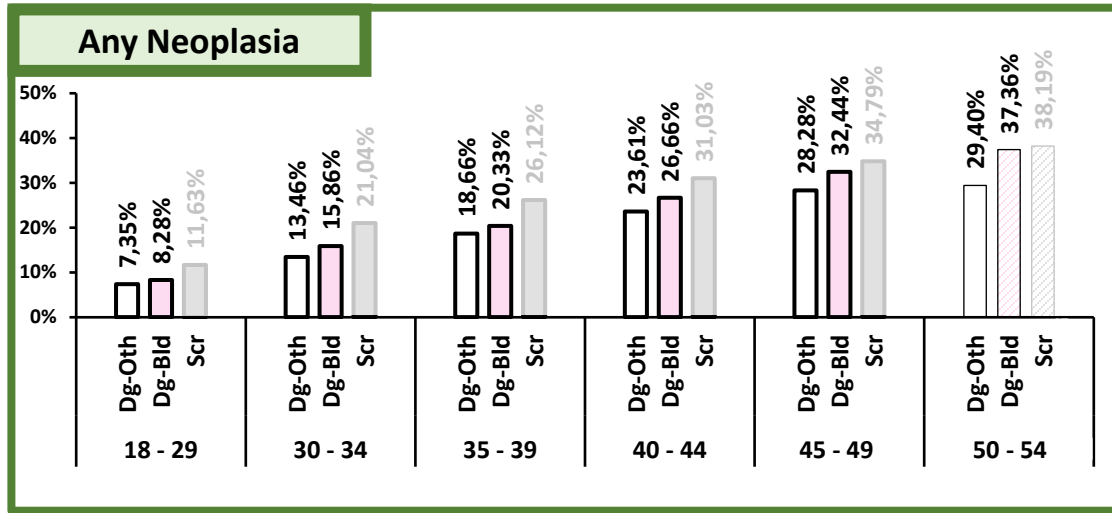
This suggests that incident cancers were prevented from forming among patients with a positive FH.



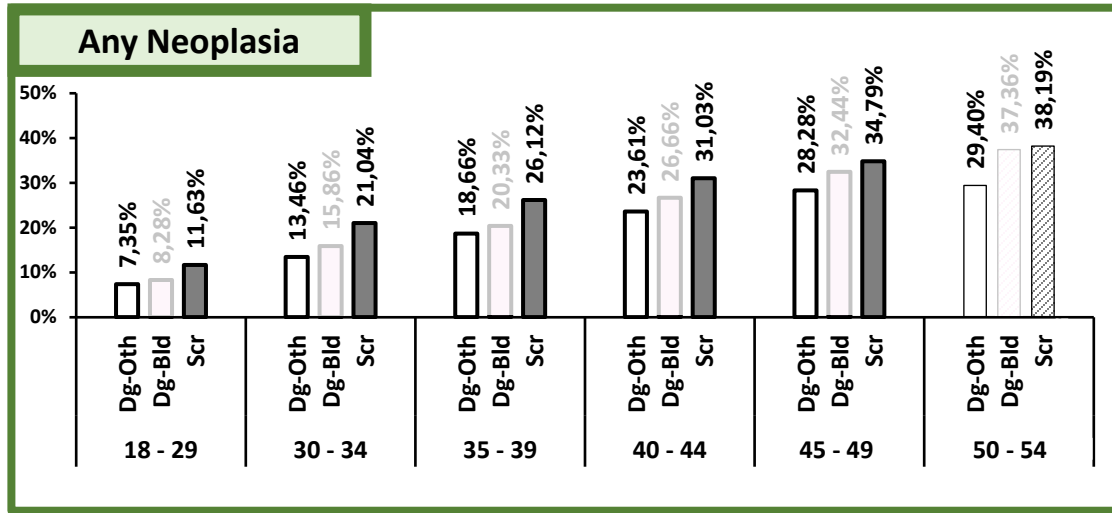
# Prevalence of Neoplasia by Indication



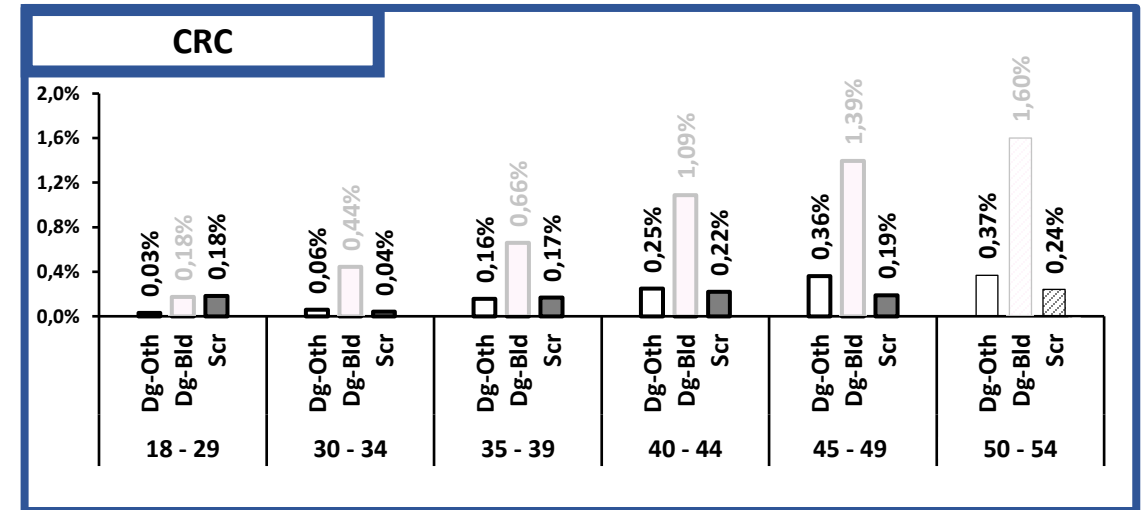
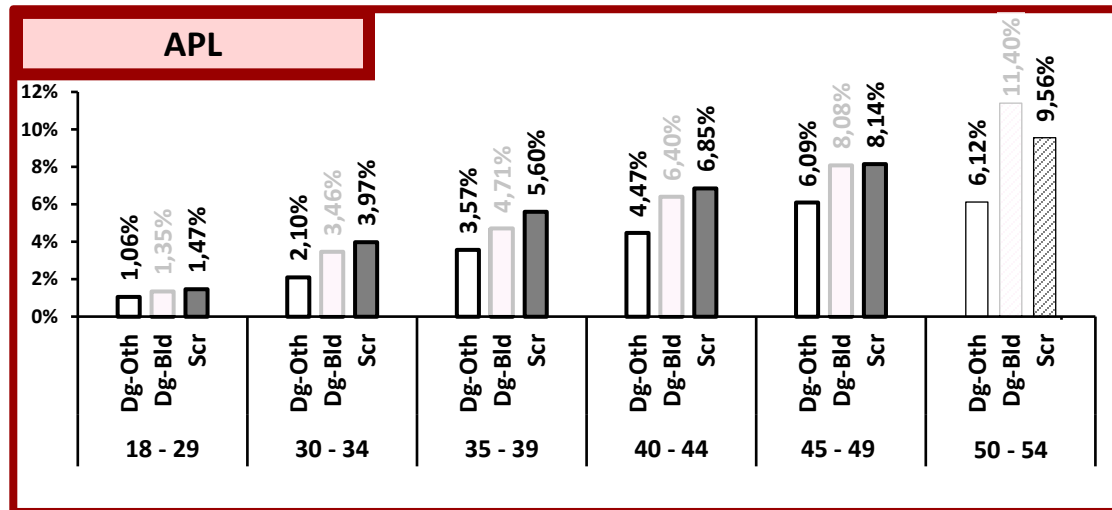
# Prevalence of Neoplasia: Dg-Bld > Dg-Oth, all groupings



# Prevalence of Neoplasia: Scr > Dg-Oth, Any Neoplasia & APL



Lower prevalence of CRC is consistent with the higher proportion of FH in this group.

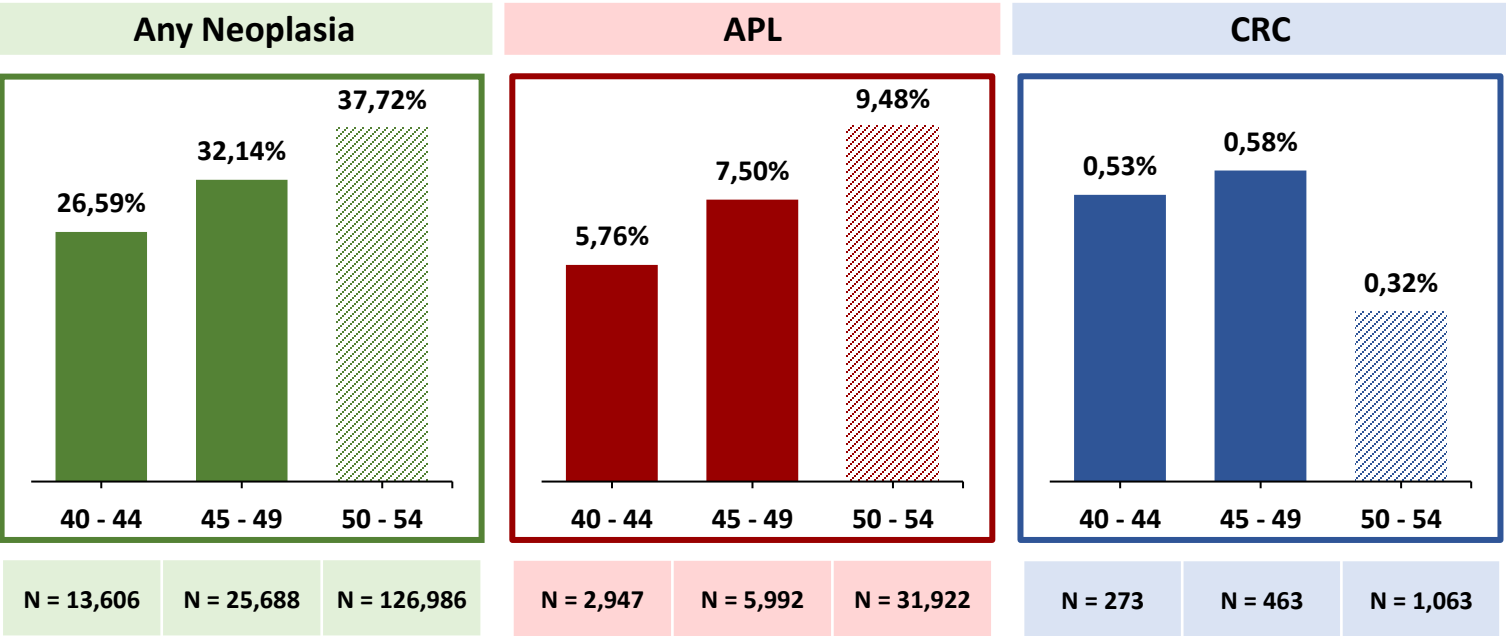


# Summary

## Predictors of Young-Onset ACRN:

	Odds Ratio
Age	1.08
Sex	
Female	ref
Male	1.67
Race	
White	ref
African American	0.76
Asian	0.89
Family History	
No Family History	ref
FH of CRC	1.21
FH of Polyp(s)	1.33
Indication	
Diagnostic – Other	ref
Diagnostic – Bleeding	1.15
Screening	1.20

## Prevalence of Neoplasia Among Patients Who Underwent Colonoscopy:

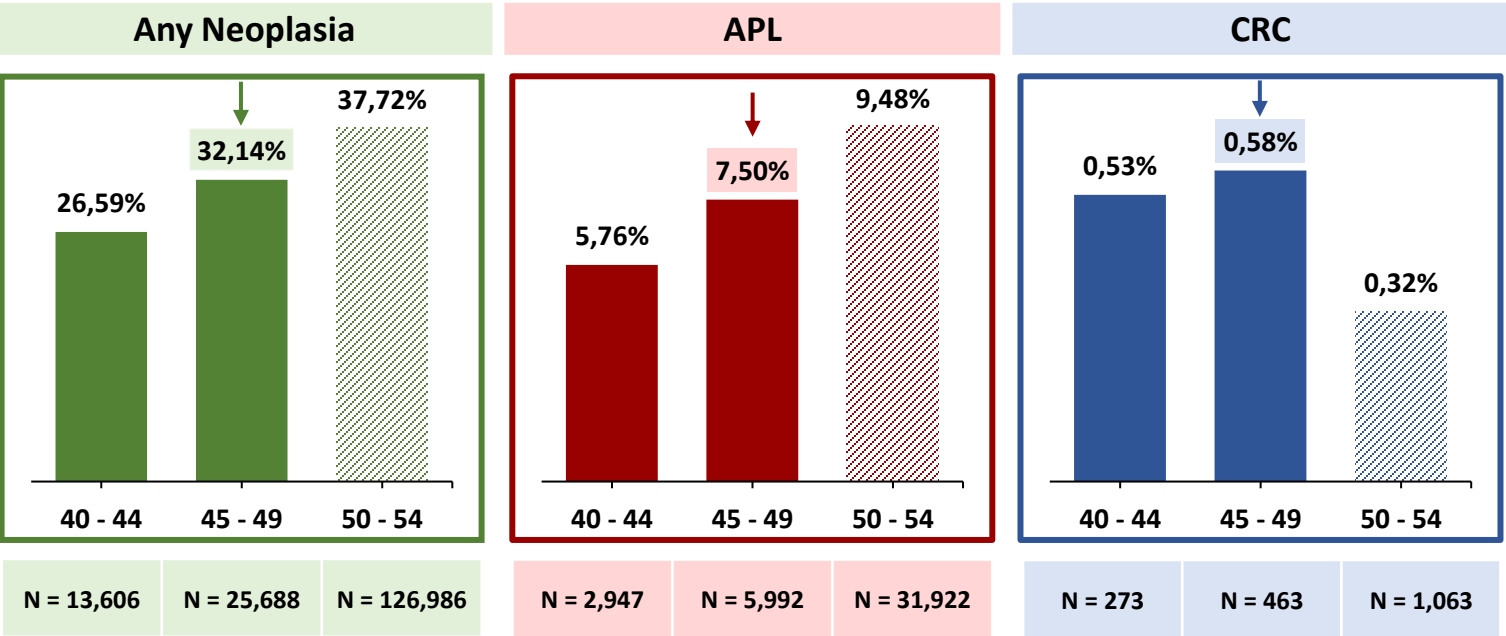


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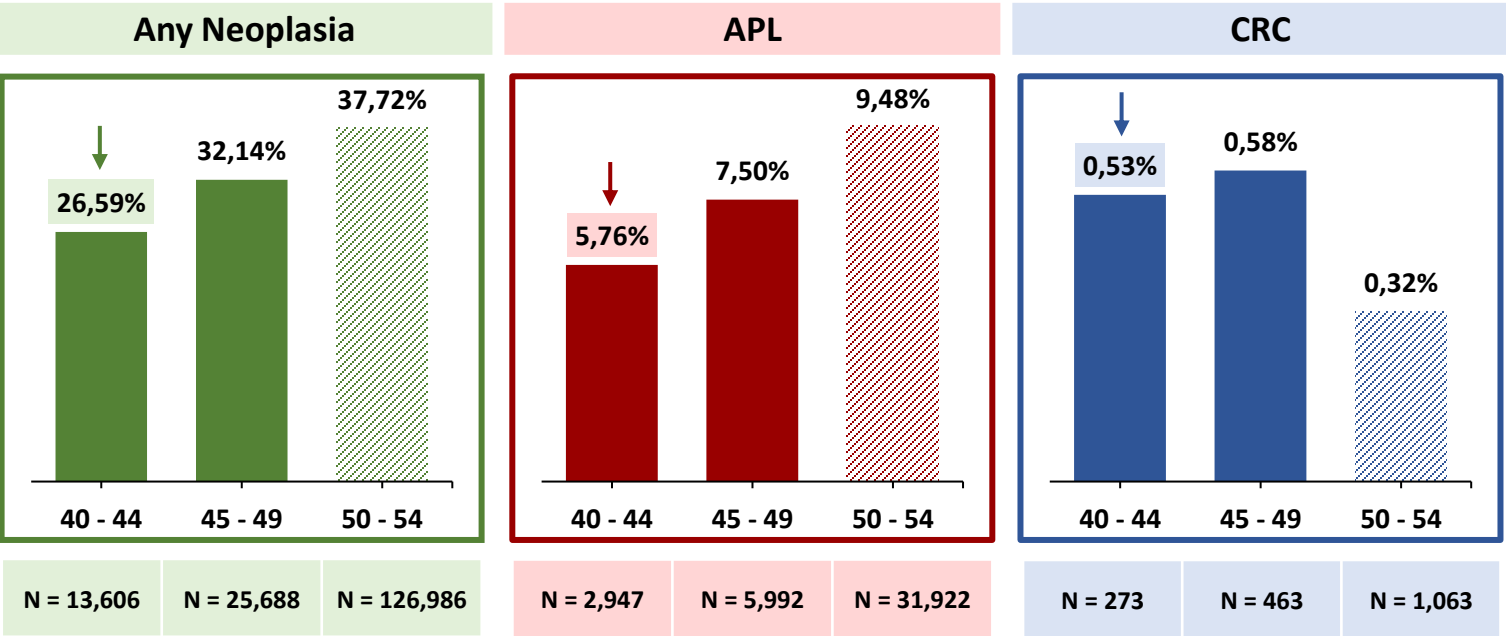


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## Prevalence of Neoplasia Among Patients Who Underwent Colonoscopy:



# Conclusions

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- With screening starting at age 45:
  - **Advanced pathology will likely be found in an appreciable proportion of cases**
- Patients with a family history of CRC:
  - **Have neoplasia rates similar to those without a family history who are five years older**
- Patients younger than 45:
  - **Considerable pathology is *also* present, even with no family history.**



# Conclusions

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- These results:
  - **Support lowering the screening age to 45**
  - **“Early messaging” prior to age 45** will be important to improve screening uptake in younger individuals

# Strengths and Limitations

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## Strengths

- Large, diverse cohort
- Patients from > 50% US states.
- Detailed neoplastic pathology

## Limitations

- Many race and ethnicity entries are “Other/Declined/Unknown”
- Questionable validity of “screening” indication in young patients

# Acknowledgments

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## **Mount Sinai:**

Parth Trivedi, BS

Aditi Mohapatra, BS

Lina Jandorf, MA

Steven H. Itzkowitz, MD

## **AMSURG:**

Melissa K. Morris, BA

Shannon Thorne

Amanda M. Ward, DNP

Sandra Smith, MBA

John W. Popp, MD, MACG

## **City of Hope Cancer Center:**

Heather Hampel, MS

## **Boston Medical Center:**

Paul Schroy, MD, MPH



**This project was supported by a Digestive Disease Research Foundation Fellowship to PDT.**

# **Thank you for your attention!**

## **Questions?**

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# References

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1. Stoffel EM, Murphy CC. Epidemiology and mechanisms of the increasing incidence of colon and rectal cancers in young adults. *Gastroenterology*. 2020;158(2):341-353.