

**THE RISK OF COLORECTAL CANCER FOLLOWING GASTRIC  
SURGERY**

By

Tricia Dawn Kutnikoff

A Thesis  
Submitted to the Faculty of Graduate Studies  
In Partial Fulfillment of the Requirements for the Degree of

MASTERS OF SCIENCE

Department of Community Health Sciences  
Faculty of Medicine  
University of Manitoba  
Winnipeg, Manitoba  
Canada

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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University  
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**of**

**MASTER OF SCIENCE**

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## ABSTRACT

Objectives: The purpose of this study was to investigate the controversial suggestion that gastric surgery increases the risk of colorectal cancer.

Methods: A population-based, historical cohort design used linked health care utilization and cancer registry data to examine colorectal cancer incidence among people with gastric surgery in Manitoba between 1984 and 1998. Risk was determined by comparing age-, sex-, and calendar year- adjusted standardized incidence ratios for the gastric surgery cohort relative to the general Manitoba population.

Results: 3,501 individuals who had gastric surgery between 1984 and 1998 contributed 30,646 person-years for study. Based on Manitobans' colorectal cancer experience, 51.3 cases of colorectal cancer were expected in the gastric cohort, but 49 cases were observed, yielding a standardized incidence ratio (SIR) of 1.0 (95% confidence interval (CI): 0.7-1.3). Many cases (N=29, or 59.2%) had colorectal cancer diagnosed within one year of their surgery, which suggests: (1) medical attention bias; (2) misdiagnosis; or (3) gastric surgery was performed secondary to colorectal cancer surgery. Excluding these cases by adjusting for a one-year induction period led to a significant SIR of 0.4 (95% CI: 0.2-0.6). Induction periods of five and 10 years continued to show this protective effect, with SIRs of 0.3 (95% CI: 0.1-0.6) and 0.1 (95% CI: 0.003-0.6), respectively.

Conclusions: This study finds a significantly reduced risk of colorectal cancer after gastric surgery when one, five, and ten year induction periods were utilized.



## ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to my supervisor, Dr. Donna Turner, for her insight, flexibility, and unwavering support in seeing this thesis through to completion; you are not only a mentor, but a true friend. I also wish to thank my committee members, Dr. Erich Kliewer, Dr. Robert Tate, and Dr. Steven Latosinsky, for their expertise and encouragement to continue with this project. I would like to thank the faculty and staff in the Department of Community Health Sciences, especially Theresa Kennedy and Dr. Tom Hassard, for their continual support during the writing of this thesis.

This project would not have been possible without the help from several staff members at CancerCare Manitoba. I gratefully acknowledge Teresa Mayer, Grace Musto, Alain Demers, and Lin Xue for their phenomenal statistical expertise; and Cheryl Clague, for creating such a pleasant working environment and always providing me with a cubicle when space was at a premium. An additional thank you goes to Kim Shore, who provided me coffee and laughter when I needed it most.

I would especially like to thank my friends and colleagues who supported me along this journey: Hannah and David Neufeld, Teresa Mayer, Carla Pindera, Leanne Leclair, Marlene and Kip Hall, Jennifer Graham, Laureen McIntyre, Jennifer Kozyniak, Tracy Bourbeau, Katherine Wood, Suzanne, Neil, Kayla, and Amanda Morgan-Gravel, Mark Taylor, Nykola Dubenski, Ann and Fred Oberbeuchner, David and Rhonda Kitsch, Alain Demers and Micheline Manseaux, and Iris Kumpula. Your encouragement and wisdom were invaluable.

Without the support of my family, the completion of this thesis would not have been possible. To Mom, Jim, Tracy, Becca, Sarah, Scot, Joanne, Andrew, Adam, Matthew, and Brandy, thank you for your love, patience, and belief in my abilities when, at times, I thought that this task was insurmountable. I am especially indebted to Cassandra, Trevor, Owen, Tabitha, Sherry, Ken, Jessica, and Carson; thank you so much for your love, support, and tolerance (as well as editing skills) over the past year.

Finally, I wish to express my gratitude to the Manitoba Health Research Council for providing financial assistance in the form of a graduate studentship.

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## CHAPTER I

### INTRODUCTION

Colorectal cancer is a serious public health concern. Cancer of the colon and rectum remains one of the most common causes of malignancy in developed countries. According to recent incidence data, colorectal cancer is the third most common type of cancer world-wide, after lung and breast cancer.<sup>(1)</sup> It is estimated that 945,000 new cases of colorectal cancer were identified in the year 2000, which accounted for 9.4% of the world total.<sup>(2)</sup> The probability of developing colorectal cancer increases with age for both men and women, especially after age 40. The risk almost doubles with each successive decade and then plateaus at 80 years of age.<sup>(3,4)</sup> Although diagnostic and therapeutic advances have been made in recent years, the world-wide five-year survival rate for colorectal cancer remains relatively poor at 40 to 50%.<sup>(5,6)</sup>

Colorectal cancer statistics for Canada (2004) are similar to world-wide estimates. Colorectal cancer malignancies (excluding non-melanoma skin cancers) are the third highest cause of cancer-related incidence for Canadians.<sup>(3)</sup> Moreover, colorectal cancer accounts for the second and third highest causes of mortality in Canadian men and women, respectively. The National Cancer Institute of Canada estimates that 19,200 people (10,400 males; 8,800 females) were diagnosed with colorectal cancer and 8,400 people (4,500 males; 3,900 females) died from the disease in Canada in the year 2004.<sup>(3)</sup> Recent survival statistics show that 5-year survival for Canadians diagnosed with colorectal cancer is between 45 and 50%, comparable to the international data.<sup>(7)</sup>

Although much effort has gone into understanding the role of genetics, lifestyle, and other environmental factors in colorectal cancer risk, researchers have begun to examine health services data in order to identify other potential risk factors for the development of colorectal cancer. There is evidence to suggest that certain surgical procedures, such as cholecystectomy<sup>(8,9)</sup> and gastric surgery,<sup>(10-16)</sup> may also increase the risk for colorectal cancer. However, no consensus has been reached regarding these potential associations, especially for gastric surgery.<sup>(17-29)</sup> Those suggesting an association between gastric surgery and colorectal cancer have proposed that alterations in intestinal bile salts, dietary fats, and bacterial flora are candidate biologic hypotheses.<sup>(9,23,30)</sup> Evidence for the role of bile acids in colorectal carcinogenesis can be seen in the increased secondary:primary bile acid ratio that is found in the feces of patients with colon cancer.<sup>(31-33)</sup> Similar changes have also been observed in the colon and rectum after gastric surgery.<sup>(22,23,28)</sup> It is hypothesized that the decreased acidity following gastric surgery alters the bacterial flora in the stomach, which then stimulates the deconjugation of bile acids into metabolites (e.g. keto, allo, and unsaturated bile acids as well as sulphate esters) that promote colorectal carcinogenesis.<sup>(34-36)</sup>

Given the controversy in the current literature and a plausible biological hypothesis, a population-based, historical cohort design was used to investigate the risk of colorectal cancer following gastric surgery focusing the following research questions:

1. Are individuals who have undergone gastric surgery at increased risk for colorectal cancer when compared to the general population of individuals in Manitoba, as assessed by age-, sex-, and calendar year-adjusted risk estimates?

2. Is there evidence of detection bias, using risks calculated by a one year induction period?

Questions such as these may be relatively easily addressed using the administrative data collected as part of the management of Manitoba's health care insurance plan and data from the Manitoba Cancer Registry.

The question is significant for Canadians because research regarding the association between gastric surgery and the subsequent development of colorectal cancer has mainly been conducted in Europe. Generalizability of results from subjects residing in European countries to those in North America may be questionable as variability may exist among the factors that influence colorectal cancer development, such as diet, lifestyle, the physical environment, surgical and diagnostic techniques, and medical therapies. Furthermore, the procedures for reporting incident cancer cases and deaths may be different, which could potentially alter study results and prevent one from making fair comparisons. After an extensive search of the literature, it appears that there are no published reports from Canada on this subject. By employing a population-based approach and exceptional data resources, the study is the first on this topic to be conducted in Manitoba. In addition, this study will assist medical researchers in further understanding the risk factors responsible for tumour formation in the colon and rectum, and determine whether a sub-set of the population may benefit from post-surgical colorectal cancer screening.

## CHAPTER II

### LITERATURE REVIEW

#### A. Patterns of Colorectal Cancer: Who, Where, and When?

The descriptive epidemiology of colorectal cancer is essential in order to better understand the etiology of the disease and to develop prevention strategies.<sup>(6)</sup> This then sets the stage for a discussion of why we see such trends, that is, a discussion of the risk factors.

##### 1. *Worldwide Statistics*

###### a) Incidence

Data from the latest volume of *Cancer Incidence in Five Continents* have been used to estimate age-standardized (1991 World Standard Population) cancer incidence rates for 57 countries over the period 1993 to 1997.<sup>(1)</sup> The highest incidence rates for colorectal cancer exist in North America, Australia/New Zealand, Western and Eastern Europe, and Japan.<sup>(2)</sup> In particular, incidence rates in the Czech Republic (60.3/100,000) and Hungary (59.8/100,000) are among the highest in the world.<sup>(1)</sup> Furthermore, there has been an extremely sharp rise in colorectal cancer incidence in Japan between 1975 and 1988, with an estimated percentage change per five-year period ranging from 20 to 35% in men and from 15 to 27% in women.<sup>(6)</sup> This rise in incidence does not seem to be an effect of an aging population since the rise occurs across all age bands.<sup>(5)</sup> Colorectal

cancer incidence rates are lowest among the populations of Middle Africa and Asia and are intermediate in southern parts of South America.<sup>(2)</sup>

Because of this geographic variation in incidence rates, environmental factors, such as diet, in combination with genetic predisposition, are hypothesized as causative agents.<sup>(37)</sup> Migration studies provide strong support for environmental influences as the primary cause of colorectal cancer.<sup>(2,37)</sup> The incidence rates of colorectal cancer in migrating populations at low risk have been observed to approach the incidence rates in the host country.<sup>(2)</sup> For example, previous studies have shown that immigrants coming from Japan, at the time when the colorectal cancer incidence was still low, have a marked increase in the number of distal colon cancers when they migrate to the United States.<sup>(6,38)</sup> It has been presumed that this change in incidence is related to a “westernized” diet.<sup>(38)</sup>

#### b) Mortality

As with the incidence rates, mortality data from the latest volume of *Cancer Incidence in Five Continents* shows that colorectal cancer is one of only four types of cancers that has a similar number of deaths in males and females<sup>(1)</sup>. The other three include myeloma, skin melanoma, and leukemia.<sup>(39)</sup> The geographical areas with the highest colorectal cancer mortality rates parallel those areas with the highest incidence rates. The highest mortality rates are observed in Australia/New Zealand (21.3/100,000 for males; 15.8/100,000 for females).<sup>(1)</sup> This is significantly greater than the average world-wide mortality estimates and indicates that people living in developed countries are at a high risk of dying from colorectal cancer.<sup>(39)</sup> While this threat is real, recent evidence suggests that the rates are now beginning to descend.<sup>(40)</sup> For example, a study

conducted in New Zealand suggests that age-specific mortality rates are declining equally for men and women in successive cohorts born from 1943 to 1953. A change in dietary factors is hypothesized for this decrease.<sup>(41)</sup> The lowest mortality rates can be seen in middle Africa (1.4/100,000 for males; 2.1/100,000 for females).<sup>(1)</sup>

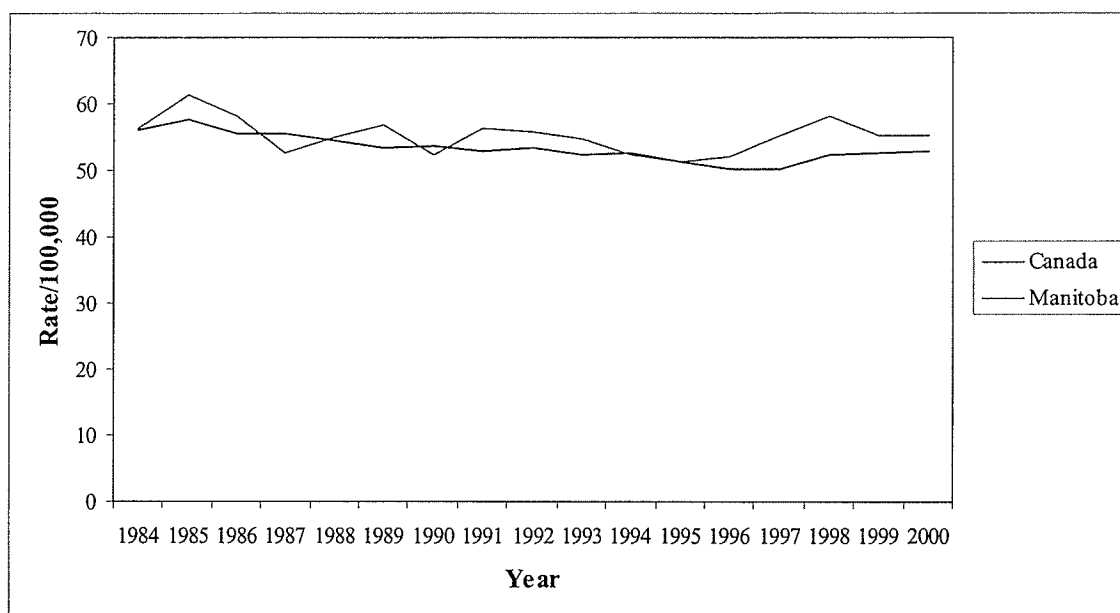
## 2. *Canadian Statistics*

### a) Incidence

Although the incidence of colorectal cancer has been rising in many countries, Canada has started to see a decrease.<sup>(42)</sup> Age-standardized (1991 Canadian population) incidence rates peaked for men during 1985 (66.2/100,000) and have declined annually until 1997.<sup>(3)</sup> The incidence rates have only slightly increased from this point forward. The estimated incidence rate for Canadian men (year 2004) was 62.0/100,000. A decrease in incidence rates is even more pronounced in the Canadian female population. Age-standardized incidence rates for Canadian women also peaked during 1985 (50.6/100,000) and then declined annually until 1997. As with the male population, incidence rates have only slightly increased since 1997. The estimated incidence rate for Canadian women (year 2004) was 41.0/100,000.<sup>(3)</sup> The average annual percent change (AAPC) in age-standardized incidence rates from 1993 to 2000 demonstrates a steady colorectal cancer incidence for males and females, at 0.4 (non-significant) and 0.0 (non-significant), respectively.<sup>(3)</sup> Age-standardized (1991 Canadian population) incidence rates for Manitoba are declining, with a trend similar to that observed nationally. Estimated incidence rates (year 2004) were slightly higher than the national average, at 65.0/100,000 for males and 43.0/100,000 for females.<sup>(3)</sup> However, Manitoba's

experience is comparable to the Canadian situation, with data from the Public Health Agency of Canada's website showing no statistically significant difference in incidence rates over the past 20 years (Figure 1).<sup>(43)</sup>

Figure 1. Age-Standardized Colorectal Cancer Incidence Rates per 100,000 (Canada 1991), Manitoba and Canada, 1984-2000



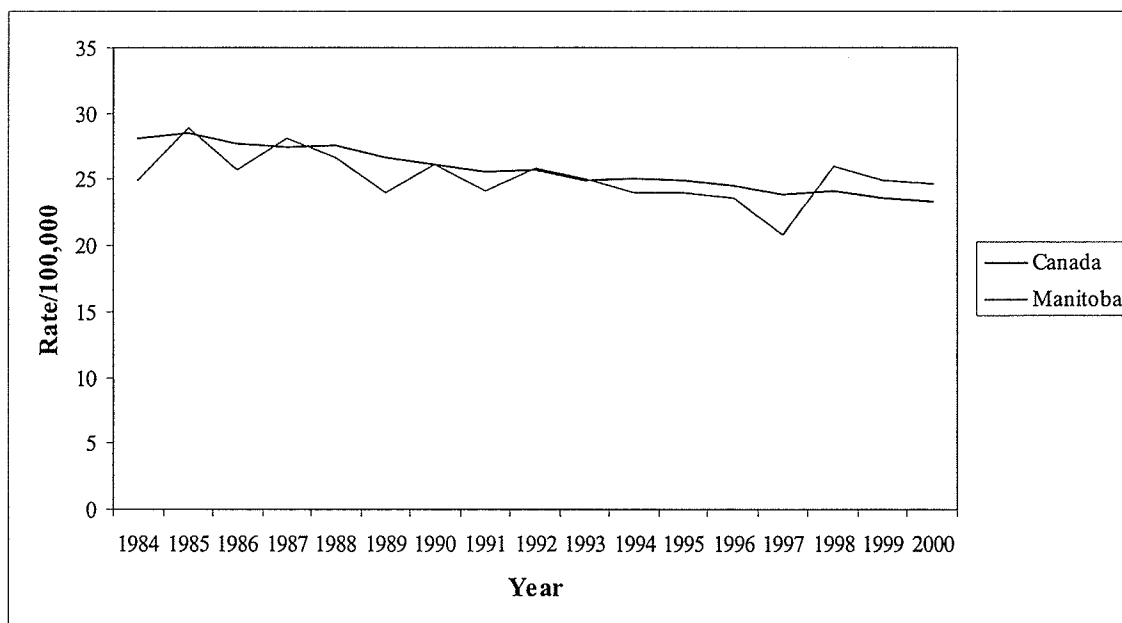
#### b) Mortality

Encouraging evidence is now beginning to show that colorectal mortality rates for Canada are also declining.<sup>(3)</sup> Age-standardized (1991 Canadian population) mortality rates for Canadian men peaked during 1985 (33.4/100,000) and have since been on the decline. The estimated mortality rate for Canadian men (year 2004) was 27.2/100,000. A decrease in mortality rates was even more pronounced in the Canadian female population. Age-standardized mortality rates for Canadian women peaked during 1984 (23.8/100,000) and have since been on the decline. The estimated mortality rate for

Canadian women (year 2004) was 17.1/100,000. This decrease in mortality is also demonstrated by an AAPC of -0.9 ( $p=0.01$ ) for males and -1.5 ( $p=0.01$ ) for females.<sup>(3)</sup>

Age-standardized (1991 Canadian population) mortality rates for Manitoba are also declining. Estimated mortality rates for individuals living in Manitoba (year 2004) were slightly higher than the national average, at 30.0/100,000 for males and 18.0/100,000 for females.<sup>(3)</sup> As with incidence, Manitoba's colorectal cancer mortality rates over the last two decades were not significantly different from the national rates (Figure 2).<sup>(43)</sup>

Figure 2. Age-Standardized Colorectal Cancer Mortality Rates per 100,000 (Canada 1991), Manitoba and Canada, 1984-2000





c) Summary

Data from the International Agency for Research on Cancer show that Canada ranks third and fifth for colorectal cancer incidence in males and females, respectively. While incidence rates have been declining in Canada and Manitoba since 1985, there has been a slight increase in incidence among both men and women since 1997. However, the average annual percent change (AAPC) in age-standardized incidence rates from 1993 to 2000 demonstrates a steady colorectal cancer incidence: 0.4 (non-significant) for males and 0.0 (non-significant) for females. Canadian mortality rates have continued to decline for both sexes, but to a greater extent in the female population. This is demonstrated by an AAPC of -0.9 ( $p=0.01$ ) for males and -1.5 ( $p=0.01$ ) for females.<sup>(3)</sup> The reasons for the increase in incidence and decrease in mortality are not completely understood, but evidence suggests that this pattern may be a result of improved diet and lifestyle factors as well as casual colorectal cancer screening; intestinal polyps that are detected early and can be removed, may decrease colorectal cancer risk. Furthermore, several randomized controlled trials have shown that screening and early detection reduced colorectal cancer mortality rates.<sup>(44-47)</sup> Evaluations of organized screening programs are currently underway in Canada to assess this effect.<sup>(3)</sup>

### 3. *Subsite Distribution of Colorectal Cancer*

One special consideration in colorectal cancer is the anatomical location of the tumours. Cancers of the colon and rectum are often considered together because of the difficulties encountered when trying to distinguish both sites in the rectosigmoid area.<sup>(1,6,48)</sup> Although this helps to prevent misclassification, it may also mask possible differences in epidemiological characteristics between colon and rectum tumours.<sup>(6)</sup>

Studies are beginning to suggest that the subsite distribution for colorectal cancer differs according to sex and geographical area.<sup>(6,49-54)</sup> In developed countries, the main difference between colon and rectal cancer lies in their sex ratio, which indicates that colon cancer is almost equally distributed between the sexes, whereas rectal cancer is more common in men (colon cancer sex ratio range=1.0-1.5 vs. rectal cancer sex ratio range=1.2-2.4).<sup>(6,55)</sup> The sex ratio for colon and rectal cancers in Canada (1988-1992) was 1.3 and 1.8 respectively.<sup>(6)</sup>

The incidence of colon cancer varies more according to geographical area than that for rectal cancer. Colon cancer tends to be more common than rectal cancer in more developed jurisdictions, especially North America and Australia/New Zealand.<sup>(6)</sup> An exception is that European registries show that rectal cancer incidence rates are generally closer to those for colon cancer. Bonithon-Kopp, et al. state: "This pattern cannot be easily explained by differences in classification of tumours located near the rectosigmoid area because the excess in colon cancer in North America is due to increased incidence rates for both right and left colon cancers."<sup>(6)</sup> The greater stability of incidence rates for rectal cancer suggests that the rectum may be less sensitive than the colon to environmental influences.<sup>(6)</sup>

Some research suggests that the relative frequency of left to right colon cancers varies according to sex. Among men, the incidence rates of left colon cancer tend to be higher than those of right colon cancer. In women, right colon cancer predominates in most geographical areas.<sup>(6,56)</sup> In addition, the incidence of right-sided colon cancer is more similar for all geographical areas as compared to the incidence of left colon cancer.<sup>(6)</sup> Possible explanations of the gender differences in colorectal cancer relate to differences in diet, physical activity, levels of alcohol consumption, and exposures to exogenous hormones.<sup>(6,57)</sup>

Over the last two decades, worldwide attention has been focused on the shifting distribution of colorectal cancers.<sup>(54,58)</sup> Studies suggest that the proportional occurrence of colon cancer is shifting from the left colon to the more proximal colon (cecum and ascending colon), with the shift being more pronounced in women.<sup>(6,49,51,52,54,56,58-60)</sup> Several studies have shown a proximal shift that was equal in both sexes.<sup>(61,62)</sup> There are no definitive explanations for the proximal shift in the subsite distribution of colorectal cancer. Some researchers suggest that it may be partly due to improved diagnostic accuracy for right-sided colon cancer.<sup>(6,52,54,63)</sup>

The variations in incidence of colorectal cancers by gender, geographical area, and subsite location imply that factors involved in the development of colorectal cancer may be partly different for the right colon, left colon, and rectum.<sup>(6,49,56)</sup> Devesa et al. support this view: "Because it is not clear to what extent colorectal cancers are similar in their pathogenesis, a descriptive analysis focusing on subsite may uncover clues of possible etiologic significance for further study."<sup>(51)</sup>

## B. Colorectal Carcinogenesis

### 1. *The Adenoma-Carcinoma Sequence*

Histopathology and molecular analyses have identified the events that underlie the initiation and progression of colorectal tumours.<sup>(64,65)</sup> Morson et al. first described this process as the adenoma-carcinoma sequence.<sup>(66)</sup> This model suggests that most, if not all, malignant colorectal tumours arise from pre-existing benign adenomas (i.e., polyps), and the rate of progression to cancer takes at least five years.<sup>(64-66)</sup> A retrospective review of Mayo Clinic records from a six-year period revealed that the cumulative risk of diagnosis of colorectal cancer at the polyp site at 5, 10, and 20 years was 2.5%, 8%, and 24%, respectively.<sup>(67)</sup> The transition from benign adenoma to carcinoma is believed to be progressive.<sup>(64)</sup> The first identifiable lesion is the aberrant crypt focus, a small dysplastic lesion in the colonic epithelium.<sup>(64)</sup> These aberrant crypt foci then expand to form adenomatous polyps which, over time, will develop into carcinomas.<sup>(64,65)</sup> The majority of polyps are sessile (polypoid) or pedunculated and asymptomatic.<sup>(68)</sup> Flat and depressed adenomas, which are difficult to detect with endoscopy, account for approximately 10% of all polyps and may take a more aggressive pathway in carcinogenesis.<sup>(68-70)</sup>; however, the research on this subject remains equivocal.<sup>(71)</sup>

The adenoma-carcinoma sequence shows that: (1) colorectal tumours involve the mutational activation of oncogenes combined with the loss of function of tumour suppressor genes; (2) multiple gene mutations are required for tumorigenesis; (3) the total accumulation of genetic changes, rather than the order of their occurrence, determines the tumour's histopathological and clinical characteristics, and (4) both hereditary and

environmental factors contribute to colorectal cancer carcinogenesis, which allows for the study of inherited and somatic genetic alterations.<sup>(64,65,72)</sup>

## *2. The Key Role of Bile Acids in Colorectal Carcinogenesis*

Bile acids are natural detergents that emulsify and aid in the digestion of dietary fat. The primary bile acids, cholic acid and chenodeoxycholic acid, are synthesized in the liver and stored in the gallbladder. They are secreted from the gallbladder into the small intestine during digestion.<sup>(73)</sup> Approximately 95% of bile acids are actively reabsorbed from the intestinal lumen and returned to the liver via the portal vein (i.e., the enterohepatic circulation). The remaining 5% of bile acids enters the colon and undergoes bacterial biotransformation reactions to form secondary bile acids, deoxycholic acid and lithocholic acid, in addition to sulfated and tertiary bile acids.<sup>(74)</sup> The secondary bile acids have been shown to have a carcinogenic nature by acting as tumour promoters<sup>(75-81)</sup> and, more recently, they have been regarded as co-carcinogens.<sup>(74,82)</sup> The molecular mechanism of the tumour-promoting actions of bile acids is not clear; however, recent evidence has demonstrated that growth promotion is mediated through the activation of the interference of tumour suppression and stimulation of growth promoters by cell signaling pathways.<sup>(75,83-85)</sup> A review performed from 1980-2003 indicates that bile acids may act as co-carcinogens through an indirect process involving induction of oxidative stress and production of reactive oxygen species that then damage DNA.<sup>(82)</sup>

## C. Factors Associated with Colorectal Cancer Risk

### 1. *Family History/Genetic Predisposition*

Approximately 20% of all colorectal cancer is estimated to have a hereditary component, such as hereditary non-polyposis colorectal cancer (HPNCC) and familial adenomatous polyposis (FAP); the other 80% is said to arise sporadically.<sup>(5,86)</sup>

Individuals have an increased risk of developing colorectal cancer if one or more first-degree relatives have developed colorectal cancer.<sup>(5,86)</sup> A prospective study found that the age-adjusted relative risk for colorectal cancer for men and women with affected first-degree relatives was 1.72. For individuals under the age of 45 who had one or more affected first-degree relatives, the relative risk was even higher at 5.37, a pattern suggestive of an inherited component as described above.<sup>(87)</sup>

### 2. *Diet, Nutrition, and Lifestyle Factors*

Genetic, experimental, and epidemiological studies suggest that colorectal cancer may result from complex interactions between genetic susceptibility and environmental factors, in particular, dietary habits.<sup>(88)</sup>

Epidemiological studies generally endorse that dietary fiber and fiber-rich foods are protective against colorectal cancer.<sup>(89,90)</sup> A role for dietary fiber in colon carcinogenesis was first proposed by Burkitt.<sup>(91,92)</sup> The idea originated from Burkitt's clinical observations that colorectal cancer was rare in African populations where the diet was high in unrefined foods.<sup>(91,92)</sup> Several review articles have reported lower colorectal cancer risk in individuals who consume high rates of fiber,<sup>(93-95)</sup> and a large cohort study

in Japan associated colorectal cancer mortality with low dietary fiber and high fat intake and suggested that there may be a threshold level of dietary fiber involved in preventing the development of colorectal cancer.<sup>(96)</sup> Despite the abundance of evidence of a protective effect, results from a large, prospective cohort study<sup>(97)</sup> and a recent prospective study<sup>(98)</sup> found no difference in the risk of colorectal cancer and the amount of dietary fiber consumed, with the suggestion that other factors are more important in the carcinogenic process.

Epidemiological data provide evidence for the protective effects of fruits, vegetables, and whole grains.<sup>(99-105)</sup> Studies on vegetable consumption, as opposed to fruit consumption, have been more consistent with finding an inverse association. The beneficial effects of these food groups are most likely due to the combined effects of their constituents, such as fiber, micronutrients, and phytochemicals.<sup>(90,99)</sup>

Estimates of relative risk show that the consumption of red and processed meats, rather than white meat, are associated with colorectal cancer risk.<sup>(106-112)</sup> The effect may be due to the damaging effects of heme on the colonic epithelium,<sup>(113-115)</sup> the formation of carcinogenic alkylating agents such as N-nitroso compounds,<sup>(116)</sup> or the release of heterocyclic amines during the cooking process.<sup>(117-119)</sup> On the other hand, two prospective cohort studies, one of 14,727 women and the other of 27,111 men, showed no overall positive or inverse association of colorectal cancer risk with intakes of red meat.<sup>(120,121)</sup> Additionally, a study by Baghurst showed that red meat intake in Australia has been decreasing since the 1970s, yet the colorectal cancer incidence has continued to increase. Results from this study also suggested that fruit and vegetable intake may be more indicative of colorectal cancer risk than red-meat consumption.<sup>(122)</sup>

Some epidemiological data suggest that a high intake of dietary saturated fat, especially in combination with a low intake of dietary fiber, increases the risk of colon cancer<sup>(123-125)</sup>. However, this finding is not consistent.<sup>(126-131)</sup> The type of fat appears to be important in cancer development. Data from international correlation and case-control studies link animal fat and red meat to colorectal cancer risk, but do not support an association between colorectal cancer and vegetable fat.<sup>(90,132,133)</sup> Several mechanisms have been suggested in order to describe the impact of saturated fat in colorectal carcinogenesis, including a key role of bile acids<sup>(134-136)</sup> and increasing insulin levels.<sup>(137-143)</sup> Certain kinds of fats may protect actually against colorectal cancer, notably omega-3-fatty acids,<sup>(144-149)</sup> omega-9-fatty acids,<sup>(144,146)</sup> and conjugated linoleic acid (CLA),<sup>(145,150,151)</sup> which might act by suppressing neoplastic transformation, inhibiting cell growth, enhancing apoptosis, and promoting antiangiogenicity.<sup>(146,148,149,152)</sup>

Related to consumption of fat, obesity has been listed as a risk factor for developing colorectal cancer in some, but not all, epidemiological studies.<sup>(153-164)</sup> A large, prospective study of 750,000 men and women showed that mortality from colorectal cancer was significantly elevated in men who were more than 40% overweight. However, no such increase was found in women.<sup>(160)</sup> Possible variations in hormone levels and physiological mechanisms may account for the differences between men and women of the effect of being overweight.<sup>(50)</sup> Related to body weight, a sedentary lifestyle has also been implicated in the etiology of colorectal cancer.<sup>(165-168)</sup> It is suggested that physical inactivity reduces insulin sensitivity leading to a growth-promotional environment in the colon.<sup>(169)</sup> Increased gastrointestinal peristalsis, resulting in reduced



bowel transit time, has been proposed for the lower risk of colon cancer in physically active individuals.<sup>(169,170)</sup>

Epidemiologic data are now beginning to indicate that alcohol and cigarette smoking may increase the risk of colorectal cancer,<sup>(111,159,171-178)</sup> although these risks have not been consistently related.<sup>(179-181)</sup> Heavy smokers have a two to three fold increased risk of developing colorectal cancer as compared to non-smokers.<sup>(174)</sup> The Health Professionals Follow-up Study showed that men who drank more than two drinks per day, containing approximately 30mL of alcohol, had twice the risk of developing distal colon cancer. Furthermore, insufficient intake of folic acid increased the alcohol associated risk for distal colon cancer approximately sevenfold, after adjustment for age, history of polyps, smoking, physical activity, BMI, red meat intake, total energy intake, and multivitamin use.<sup>(182)</sup>

### *3. Medical History and Colorectal Cancer*

Despite a significant role of lifestyle factors and family history, a person's medical history has been hypothesized to play a key role in colorectal carcinogenesis. Several pre-existing medical conditions can predispose individuals to an increased risk of colon cancer. These include breast,<sup>(183-185)</sup> ovarian and endometrial cancer,<sup>(186,187)</sup> diabetes,<sup>(188-190)</sup> ulcerative colitis and irritable bowel syndrome,<sup>(191-195)</sup> and acromegaly.<sup>(196-199)</sup> There may be shared risk factors for these types of conditions, such as reproductive, hormonal, or dietary factors.<sup>(200,201)</sup> The use of NSAIDs (non-steroidal anti-inflammatories) may also reduce colorectal cancer risk,<sup>(202-207)</sup> although not all have arrived at this conclusion.<sup>(208-210)</sup>

Researchers have also investigated the potential relationship of hormonal factors to try to explain some of the differences in incidence, mortality, and subsite distribution of colorectal cancer between men and women.<sup>(211-215)</sup> Oral contraceptive and hormone replacement therapy have also been extensively investigated. For example, Franceschi et al. reviewed several epidemiological studies and found that a reduced risk of colorectal cancer was present in three of four cohort studies that examined ever-users of oral contraceptives. This review concluded that it seems that oral contraceptives do not increase and may even have a favourable effect on the incidence and mortality of colorectal cancer.<sup>(216)</sup> Several current epidemiological studies also support a protective effect among users of post-menopausal female hormone supplements.<sup>(217-219)</sup> It is proposed that endogenous and exogenous female hormones may influence colorectal cancer risk by decreasing the concentration of secondary bile acids, which are believed to be carcinogenic in the colon and rectum.<sup>(220,221)</sup> Sex hormones may also moderate cell proliferation and differentiation through their ability to down regulate the expression of oncogenes.<sup>(220)</sup>

A few types of surgical procedures have been hypothesized to have a role in the development of colorectal cancer. One of these is removal of the gallbladder, cholecystectomy, a primary option in the management of gallstone disease. Several epidemiologic investigations have shown an association between cholecystectomy and colorectal cancer although the evidence remains equivocal.<sup>(8,9,30,222-224)</sup> The major factors in this relationship are thought to be alterations in intestinal bile salts, dietary fats and bacterial flora.<sup>(9,23,30,224)</sup>

The changes described for cholecystectomy are similar to those observed in the colon and rectum after gastric surgery. This mechanism forms the biological mechanism for gastric surgery to subsequently lead to an increased risk of colorectal cancer.<sup>(22,23,28)</sup> This is the topic under consideration for this thesis; therefore, a full review of the evidence follows in its own section (below).

#### *4. A Special Circumstance: Gastric Surgery as a Risk Factor for Colorectal Cancer*

The potential impact of gastric surgery on the risk of colorectal cancer has received attention only within the last two decades.<sup>(23)</sup> Table 1 summarizes the key studies on gastric surgery and the subsequent development of colorectal cancer. These studies vary according to study type (cohort, case-control, experimental), sample size, type of surgery (vagotomy, gastrectomy, pyloroplasty), length of follow-up, indicators of risk (incidence, death rate, proportional mortality rate), and degree of analytical detail. As a result of these variations, there is little consensus as to the level of risk for colorectal cancer following gastric surgery.

Table 1. Key Studies on Gastric Surgery and the Subsequent Development of Colorectal Cancer

Reference	Study Design	Indicator	Size	Surgery Type	Follow-Up Period	Induction Considered?	Subgroup Analysis	Risk
McLean-Ross et al., 1982	Cohort	Proportional mortality rate	779	All Types	25 years	No		RR=1.8 (p<0.01)
Macintyre et al., 1994	Cohort	Proportional mortality rate	2,241	All types	20 years	Yes	1-20 years post-op 20+ years post-op	RR=1.39 (95% CI=0.85-2.15) RR=0.99 (95% CI=0.36-2.16)
Inokuchi et al., 1984	Cohort	Death rate	3,827	Billroth I&II	30 years	No	Males	RR=2.52 (p<0.05)
Watt et al., 1984	Cohort	Death rate	725	Vagotomy	25 years	No		RR=2.3 (p<0.05)
Caygill et al., 1987	Cohort	Death rate	4,514	All types	25 years	Yes	0-19 years post-op 20+ years post-op	RR=0.7 (p<0.05) RR=1.6 (p<0.05)
Caygill et al., 1988	Cohort	Death rate	4,466	All types	20 years	Yes	0-19 years post-op 20+ years post-op	RR=0.5 (p<0.01) RR=3.1 (p<0.001)
Tersmette et al., 1990	Cohort	Death rate	2,633	Billroth I&II	30+ years	Yes	5+ years post-op (Males)	RR=0.58 (95% CI=0.34-0.92, p<0.01)
Offerhaus et al, 1992	Cohort	Death rate	504	Billroth I&II	30+ years	Yes	All intervals	NS
Caygill et al, 1991	Cohort	Death rate	1,643	Vagotomy	30+ years	No	Males	RR=1.6 (p<0.05)
Bundred et al., 1985	Case-control	Incidence	289	All types	40 years	No		$\chi^2=4.69$ (p<0.05); RR=2.1 (95% CI=1.1-4.0)
Toftgaard et al., 1987	Cohort	Incidence	3,918	All types	27 years	Yes	All intervals	NS
Thiruvengadam et al, 1988	Cohort	Incidence	337	All types	24 years	No		RR=0.4 (95% CI=0.1-0.9)
Mullan et al., 1990	Case-control	Incidence	100	Vagotomy	20 years	Yes		Increased ( $\chi^2$ sig, p=0.01)
Lundegardh et al., 1990	Cohort	Incidence	6,459	Billroth I&II	33 years	Yes	0-19 years post-op 20-33 years post-op	SIR=0.75 (95% CI=0.58-0.96) SIR=1.02 (95% CI=0.79-1.29)
Mizusawa et al., 1990	Cohort	Incidence	1,927	Billroth I&II	18 years	Yes	Males	RR=2.09 (p<0.005)
Moller et al., 1991	Cohort	Incidence	4,107	All types	32 years	Yes	20+ years post-op	RR=1.22 (NS)
Eide et al., 1991	Cohort	Incidence	4,224	Billroth I&II	30+ years	Yes	Males Time trend analysis	RR=1.40 (95% CI=1.05-1.83) Protective 30+ years post-op
Fisher et al., 1994	Cohort	Incidence	7,609	All types	20 years	Yes	16-20 years post-op	SRR=1.13 (95% CI=0.7-1.8)
Houghton et al., 1990	Experimental	Incidence	105	All types	6 months	NA	Partial gastrectomy	Protective ( $\chi^2=6$ , p<0.05)
Nelson et al., 1992	Experimental	Incidence	85	Vagotomy	6 months	NA		Increased (NS)

McLean-Ross and colleagues conducted one of the earliest cohort studies proposing an association between gastric surgery and colorectal cancer. Using a study population of 779 people, they observed an 80 per cent increase ( $p < .01$ ) in colorectal cancer deaths among patients who had previously undergone gastric surgery.<sup>(10)</sup> Subsequent cohort studies have also demonstrated this positive association.<sup>(11-14)</sup> Mizusawa and colleagues (1990) conducted a prospective cohort study on 1,927 patients who had undergone gastrectomy for gastroduodenal diseases over an 18-year time period. An overall 1.96 fold ( $p < .003$ ) increased risk of colorectal cancer was discovered. In particular, the significant risk occurred in men who had undergone the Billroth II procedure (3.17 fold,  $p < .002$ ). Increased risk for women appeared with the Billroth I procedure (2.35 fold), although this was not statistically significant. An explanation for the differences in risk between these men and women was not offered.<sup>(11)</sup> A cohort study conducted by Caygill (1991) reported the 20-year follow-up of 1,643 patients treated by vagotomy at York District Hospital. An overall 1.7 fold ( $p < .01$ ) increased risk of death due to colorectal cancer was seen in the gastric surgery cohort (1.6 fold for males,  $p < .05$ ; 2.1 for females,  $p = .06$ ).<sup>(12)</sup>

Two case-control studies have also documented an increased incidence of colorectal cancer.<sup>(15,16)</sup> In particular, Bundred (1985) found a 2.1 excess risk of colorectal cancer after a mean follow-up of 16 years ( $p < .05$ ). Patients' smoking habits in the gastric surgery group ( $n = 289$ ) and the control group were shown not to be statistically different from one another, which substantiates the association between gastric surgery and colorectal carcinogenesis despite smoking status.<sup>(15)</sup>

It is interesting to note that one study by Eide and colleagues (1991) initially found an increased risk in mortality, followed by a protective effect 30 years after gastric surgery.<sup>(17)</sup> This study cross-checked gastric surgery data of 4,224 patients with the Cancer Registry of Norway to determine patients in whom colorectal cancer had been diagnosed. They detected a 1.73 fold excess risk of developing right colon cancer in males operated on for duodenal ulcers over a 30-year follow-up period (95% CI=1.19-2.43). Increased risk was also found in females operated on for gastric ulcers (1.32 fold), but it was not statistically significant. The reasons for increased risk to be confined to males also remain unclear, but the authors suggested that lifestyle factors, such as smoking and diet, may produce carcinogenic substances, whose effect is enhanced by gastric surgery. However, after conducting a time-trend analysis, it was discovered that there was no increasing risk of colorectal cancer with the passage of time, which would be expected if the increased risk was solely due to the changes in bile acid profiles following gastric surgery.<sup>(17)</sup>

Furthermore, several studies have demonstrated that gastric surgery may elicit a sole protective effect<sup>(18-19)</sup> or a pattern of a protective effect for the first 15 to 20 years following gastric surgery, with a subsequent increase in colorectal cancer risk.<sup>(20-22)</sup> In particular, a cohort study conducted by Caygill (1987) compared death rates due to colorectal cancer for gastric surgery patients versus those for the general population. The study population was much larger than that of the study conducted by McLean-Ross and colleagues, consisting of 4,514 patients. Caygill's study found that there was a significant decreased risk of mortality (0.7,  $p < 0.05$ ) for the first 19 post-operative years, followed by a significant increased risk (1.6 fold,  $p < 0.05$ ) thereafter.<sup>(20)</sup> A more detailed analysis of this

cohort (Caygill, 1988) showed that the excess risk of colorectal cancer was limited to females with gastric ulcer treated by Billroth I procedure 20 or more years post-surgery (9.5 fold,  $p < .001$ ). The authors suggested that these sex differences may imply the role of hormonal factors in colorectal carcinogenesis.<sup>(21)</sup>

Several cohort studies<sup>(23-27)</sup> as well as two animal studies<sup>(28,29)</sup> did not show any relationship between colorectal cancer and gastric surgery. Of particular interest is the study conducted by Fisher (1994), the largest cohort study on this topic to date. A cohort of 7,609 males, undergoing gastric surgery, was selected from the Department of Veterans Affairs hospital admissions in 1970 and 1971 and matched to a random sample of 8,374 male patients from the same time period. Although the follow-up period occurred over a significant time span of 19 years, no increase in colorectal cancer was observed (risk ratio=0.81, 95% CI=0.62-1.05).<sup>(24)</sup>

Moreover, a recent meta-analysis conducted by Munnangi and Sonnenberg (1997) summarized a substantial portion of the epidemiological research published between 1965 and 1996. The Mantel-Haenszel procedure was used to calculate a weighted odds ratio of the results from 14 studies (13 cohort studies; 1 case-control study). The summary odds ratio was 1.09 with a 95% confidence interval of 0.96-1.24. A test of heterogeneity yielded a  $\chi^2$  value of 26.87 ( $p = .013$ ). Most heterogeneity was related to the one case-control study and, after eliminating it from the meta-analysis, the  $\chi^2$  dropped to a nonsignificant level ( $\chi^2 = 18.91$ ,  $p = .091$ ). The authors concluded that gastric surgery does not result in an increased risk for colorectal tumours.<sup>(225)</sup>

Although suggestive, the findings of the meta-analysis do not resolve the question of gastric surgery's role in colorectal cancer. Meta-analysis remains a controversial topic

in epidemiology, with respect to how and even if it should be performed.<sup>(226)</sup> Generally, a meta-analysis must rely on combining studies with heterogeneous designs and outcome parameters. The 14 studies in the present meta-analysis are no exception. Only a portion of the literature on the topic was included in the analysis. Of those included, they varied according to type of study (prospective cohort vs. retrospective cohort vs. case-control), sample size (range=100-6,459 subjects), and outcome parameter (incidence vs. proportional mortality rate vs. death rate). It has been argued that the summary statistic resulting from pooled results of such diverse studies is inaccurate and meaningless, leaving the gastric surgery colorectal cancer debate unresolved.<sup>(225,226)</sup>

##### *5. Significance of the Issue: Why Worry About Gastric Surgery as a Colorectal Cancer Risk Factor?*

Given the role of lifestyle factors and heredity, one might ask: why should Canadians worry about gastric surgery as a colon cancer risk factor? The answer is that in the past, many individuals were “exposed” to this surgery. Specifically, patients with gastric and duodenal ulcers were treated by decreasing stimulated acid secretion via gastric surgery up until the late 1970s.<sup>(87,227-229)</sup> Until approximately 1960, the operation of choice was partial gastrectomy either by the Billroth I or Billroth II (Pola) procedures. Due to nutritional and functional complications associated with these procedures, they were replaced by truncal vagotomy and drainage, then by selective vagotomy, and finally by proximal gastric vagotomy.<sup>(230)</sup> More recently, medical treatment with acid inhibiting drugs, such as histamine receptor antagonists, as well as antibiotics to eradicate *Helicobacter pylori*, have reduced the need for surgery.<sup>(231)</sup>



However, there still remains a large cohort of people who underwent gastric surgery for peptic ulcer disease 15 to 30 years ago.

Moreover, several epidemiological studies have demonstrated that the incidence of emergency peptic ulcer surgery has not declined, even though the incidence of elective surgery for peptic ulcer has diminished in recent years.<sup>(232-235)</sup> Proximal gastric vagotomy, truncal vagotomy with pyloroplasty, and distal gastric resection are frequently performed in emergency situations.<sup>(233)</sup> Johnson and Chir also suggest that gastric surgery, especially proximal gastric vagotomy, should be considered in the following two situations: patients in whom *Helicobacter pylori* cannot be eliminated and patients who cannot cease NSAID use because of other medical conditions.<sup>(236)</sup> For these reasons, gastric surgery remains a potential risk factor for colorectal cancer development and warrants further investigation, as it will be important to determine if this subset of the population may benefit from post-operative endoscopic screening.

It is evident that problems exist in the current literature regarding the association between gastric surgery and the subsequent development of colorectal cancer. Differences in study design, study population, and sample size have restricted the ability to conclude with certainty that gastric surgery is a determinant of colorectal cancer. Further cohort studies with a population-based focus and long follow-up period, in communities with high quality of cancer registration, are required since this association remains tenuous. Manitoba is a province in which studies of this type may be undertaken since it has an abundance of population-based administrative data that can be linked to its high quality, central cancer registry.

## CHAPTER III

### METHODS

#### A. Study Design

A historical cohort study was conducted to examine the association between gastric surgery and the subsequent development of colorectal cancer. This method examines a specific population that has been exposed to a risk factor in the past, and follows the group forward in time in order to determine their current health status.<sup>(237)</sup> The risk for the development of colorectal cancer in this cohort was compared to the experience of the general Manitoba population using the person-years at risk methodology (Section D.2).

Record linkage between population-based data sources was a key prerequisite of this study. Record linkage is defined as a method for merging information contained in two or more independent sources that refers to one individual.<sup>(238)</sup> There are two methods used in the record linkage process: deterministic and probabilistic linkage. Deterministic linkage is based on user-directed steps, often focusing on a unique identifier (e.g. personal health identification number, i.e., PHIN) for linking records pertaining to the same individual. It is best implemented when the available identifiers are accurately recorded in both datasets.<sup>(239)</sup> However, as Howe<sup>(240)</sup> indicates, there can be errors in record linkage when using a unique identifier, although they are likely to be small, which necessitates a probabilistic component to many linkage projects. The Manitoba Cancer Registry is routinely linked to other population-based datasets maintained for the

administration of the Manitoba Health Care Insurance Plan using a combination of probabilistic and deterministic approaches such that a PHIN is assigned to all cases. This facilitates the subsequent use of deterministic linkage based on an anonymized (scrambled) PHIN for projects such as the one proposed.

## **B. Data Sources**

Data regarding gastric surgeries and other health care use in Manitoba have been collected and stored in the hospital separation (discharge) and medical claims files maintained by Manitoba Health since the early 1970s.<sup>(241-243)</sup> Likewise, during the same time period, demographic and follow-up information, including migration and date of death, have also been recorded in the registrant files maintained by Manitoba Health.<sup>(241-243)</sup> These computerized files have been linked to the Manitoba Cancer Registry, a population-based database which has maintained information on all cancers diagnosed in residents of Manitoba since 1956.<sup>(244)</sup>

### *1. The Manitoba Health Datasets*

Manitoba Health maintains several separate files (e.g. registration, hospital, and medical claims) for payment and administrative purposes. This insurance plan is characterized by universal coverage (i.e., all individuals registered in Manitoba are covered under the plan, regardless of where they receive care).<sup>(241)</sup> Most hospital and medical care is covered under the Manitoba Health Services Insurance Plan with some exceptions (e.g. medications provided outside of the hospital setting).<sup>(245)</sup>

The registration file contains information regarding the population of Manitoba (i.e., all individuals registered with the Manitoba Health Services Insurance Plan) and is organized by a unique, unchanging personal health identification number (PHIN) on an individual basis. The registration file also includes a family registration number, which may change if there is an alteration in a woman's marital status and does change when an individual turns 18 years of age. The population registry records information on each individual's place of residence at the time of the service (thereby keeping track of persons who enter and leave the province), insurance coverage, date of birth, and date of death.<sup>(243)</sup> The registry is routinely updated by acquiring birth and death information from Vital Statistics.<sup>(246)</sup>

The hospitalization file contains data regarding individual identifiers (PHIN), admission/separation dates, ICD-9 diagnosis codes, services rendered (e.g. surgical procedures) as well as the identification numbers of the surgeon or attending physician, consultants, and anesthetist.<sup>(241)</sup> There is an identical format for both inpatient and outpatient abstracts which are recorded on the same file; up to 12 procedure codes and 16 diagnosis codes can be recorded in each abstract.<sup>(247)</sup> In addition, hospital separation data are organized according to date of discharge on a fiscal year basis.<sup>(247)</sup>

Also available, but not used in the current study, are medical claims, the medium for physician remuneration. Claims are submitted to Manitoba Health for medical services rendered to patients and contain the physician's identification number, the patient's identifying information, the patient's residence, tariff code(s), and ICD-9 diagnosis code(s).<sup>(241)</sup>

As previously stated, the population registry, medical claims, and hospital separation files at Manitoba Health contain a unique personal health identification number (PHIN) for each individual registered with the Manitoba Health Services Insurance Plan. This number can be scrambled (i.e., anonymized) and linked to the other databases, such as the Manitoba Cancer Registry, for research purposes. Moreover, the high quality and validity of the Manitoba Health data files has been confirmed by several research studies,<sup>(241,246,248-253)</sup> providing reassurance as to its comprehensiveness and accuracy of entry into the data base.<sup>(254)</sup>

The current study focused on gastric surgeries performed in Manitoba from 1984, the time that complete PHIN information was available, to 1998, the year comprising the most complete cancer registration at the time of commencing the study. The two anonymized files provided by Manitoba Health included: (1) the hospital separation file for the determination of gastric surgery procedures to be linked to the Manitoba Cancer Registry, for the years 1984 to 1998 and (2) the registrant file for the determination of population denominator values for this specified time period.

## *2. The Manitoba Cancer Registry*

The Manitoba Cancer Registry (MCR) is an information system, legally mandated by the Public Health Act, for the collection, management and analysis of data on all cancer cases diagnosed for the province of Manitoba. The Manitoba Cancer Registry became population-based in 1956; however, the database also contains non-population-based information on cancer cases dating back to the 1930's.<sup>(244,255)</sup> The superior quality of the MCR has been repeatedly recognized by the North American Association of

Central Cancer Registries (NAACCR), a professional organization that develops and promotes uniform data standards for cancer registration.<sup>(256)</sup>

Cancer registrars, certified health information professionals, collect, classify, and maintain the database. In order to ensure a high level of case ascertainment, the MCR uses multiple sources: physician notifications, pathology and cytology reports, and hospitalization, mortality and autopsy records. According to current rules, the most definitive procedure by which a diagnosis is achieved is entered into the database in the following descending order of priority: histology, autopsy, cytology, radiology, surgery or clinical diagnosis, death certificate only, or unknown diagnosis method. As with the method of diagnosis, the date of diagnosis is recorded in the following descending order of priority: date of cytological diagnosis, date of histological diagnosis, date of clinical diagnosis, or date of death if the case was not reported at any other time. In cases that are initially diagnosed by cytology and confirmed by histology within three months, the diagnosis dates and methods are changed to correspond with the most definitive (i.e., histological) sources.<sup>(257)</sup>

Variables contained in the MCR core dataset include: patient demographics (name, address, date of birth); cancer diagnosis, site, and morphology; place and date of diagnosis; place and date of treatment; date and cause of death (if applicable). The information is coded using the International Classification of Disease for Oncology (ICD-O, Third Edition) and the International Statistical Classification of Disease and Health Related Problems (ICD-10; ICD-9 for years prior to 2002).<sup>(244,255)</sup>

### **C. Creating the Study Dataset: Gastric Surgery for Benign Disease and Subsequent Colorectal Cancer**

There are two cancer registry files that are available for record linkage at CancerCare Manitoba: (1) a linked cancer registry and (2) an unlinked cancer registry (i.e., the registry that contains the originally entered cancer data). Staff at CancerCare Manitoba routinely link cancer registry data to the population registry at Manitoba Health in order to create a linked cancer registry. As noted, routine linkage using a deterministic approach (exact matches on all variables such as name, date of birth, and sex) followed by a probabilistic match strategy results in a linked database containing a PHIN for each individual with a cancer diagnosis. This allows for deterministic data linkages, based solely on PHIN, to be conducted by researchers. Not all persons from the cancer registry will match to the population registry and, therefore, a small number of individuals may be dropped from the linked cancer registry file.

Two kinds of cancer were of interest for this study, colorectal cancer (the study endpoint) and gastric cancer, used to indicate whether the gastric surgery was for malignant, rather than benign, disease. Patients with surgery for gastric cancer had to be excluded from the cohort. Records containing ICD-9 diagnosis codes for colorectal cancer (proximal cancer=153.0-1, 153.4-7; distal cancer=153.2-3; 154.0-3; unspecified cancer= 153.8-9; 154.8) and gastric cancer (151.0-9) were extracted from the linked (April 2002 version) as well as the unlinked (February 2003 version) cancer registries for comparison purposes. This was performed to ensure that the linked cancer registry file was still comprehensive in covering the population and best suited for deterministic linkage; otherwise, a probabilistic strategy using the unlinked registry would be

required). The unlinked cancer registry contained 10,405 diagnoses of colorectal cancer during the period 1984 to 1998, which represented 10,057 individuals. There were 2,007 records of gastric cancer in the unlinked registry, which represented 2,005 individuals. For the same time period, the linked cancer registry was shown to possess 10,400 records of colorectal cancer, which represented 10,054 individuals. There were 2,008 cases of gastric cancer in the linked registry, which represented 2,006 individuals.\* Because of the minimal discrepancy between the two databases, the linked cancer registry was chosen for deterministic record linkage to the Manitoba Health hospital separation data. An anonymized cancer file was created by: (1) removing the cancer registration number (CRNUM) from each record and (2) scrambling the PHIN in each abstract with an algorithm maintained at Manitoba Health. Likewise, PHINs in the hospital separation dataset were scrambled with same algorithm as the cancer registry file so that individuals could not be identified, but linkage could still be achieved.

## **D. Data Analysis**

### *1. Inclusion/Exclusion Criteria*

The target population for the purpose of this study included all Manitobans registered with the Provincial Health Care Insurance Plan from 1984 to 1998. The exposed cohort consisted of Manitoba residents who underwent gastric surgery for benign disease in Manitoba between 1984 and 1998. The gastric surgeries chosen for this study were based upon a literature review as well as in consultation with a surgical

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\* Note that the linked cancer registry was based on an earlier snapshot of the main cancer registry (April, 2002) than the "unlinked" version of the registry, which accounts for the slight difference in case counts.



oncologist at CancerCare Manitoba. Table 2 provides the list of ICD-9 procedure codes designating the gastric surgeries relevant to the current project.

Table 2. ICD-9 Codes Designating the Gastric Surgery Cohort, Manitoba, 1984-1998

43.3 Pyloromyotomy	44.0 Vagotomy
43.5 Partial Gastrectomy with Anastomosis to Esophagus	44.00 Vagotomy, Not Otherwise Specified
43.6 Partial Gastrectomy with Anastomosis to Duodenum	44.01 Truncal Vagotomy
43.7 Partial Gastrectomy with Anastomosis to Jejunum	44.02 Highly Selective Vagotomy
43.8 Other Partial Gastrectomy	44.03 Other Selective Vagotomy
43.81 Partial Gastrectomy with Jejunal Transposition	44.2 Pyloroplasty
43.89 Other Partial Gastrectomy with Bypass Gastrogastrostomy	44.3 Gastroenterostomy with or without Gastrectomy
43.9 Total Gastrectomy	44.31 High Gastric Bypass
43.91 Total Gastrectomy with Intestinal Interposition	44.39 Other Gastroenterostomy
43.99 Other Total Gastrectomy	44.5 Revision of Gastric Anastomosis

The outcomes of interest for this study were death or diagnosis of colorectal cancer, as indicated by the Manitoba Cancer Registry. For those individuals with multiple colorectal cancer diagnoses, the first instance (i.e., earliest diagnosis date) of colorectal cancer was used to calculate person-years at risk.

In order to construct the most unbiased cohort possible, all persons with a diagnosis of colorectal and/or gastric cancer prior to surgery were removed from the analysis. In addition, those individuals who received a diagnosis of gastric cancer within

three months of surgery were also removed to ensure that the surgeries being performed on the cohort were for benign reasons.

## *2. Standardized Incidence Ratios - Calculation Using Person-Years at Risk Methodology*

The statistical software package SAS 8.2<sup>®</sup> was used to calculate standardized incidence ratios, which were adjusted for age, sex, and calendar year.<sup>(258)</sup> A standardized incidence ratio (SIR) is the ratio of the number of cases of a specified condition in the study population (observed numbers) to the number of cases that are expected if the study population had the same incidence rate as the general population.<sup>(237)</sup> For this study, the SIRs compared the risk of colorectal cancer for the gastric surgery cohort against that for the general population of Manitoba.

The observed number of colorectal cancer cases was determined by record linkage. The method used for calculating the expected number of colorectal cancer cases was based on the person-years at risk (PYAR).<sup>(259)</sup> For each subject, PYAR began accruing from the date of gastric surgery and ended at the date of colorectal cancer diagnosis, death, or study end point (December 31, 1998), whichever occurred first. Normally, provincial migration patterns would also be included as an endpoint for the PYAR calculation; however, due to the unavailability of the registrant file at the time of analysis (and the minimal effect on results observed in other work using similar Manitoba datasets),<sup>(260)</sup> data regarding provincial migration were not included in the PYAR calculation. PYAR were calculated by ten-year age groups and sex during each calendar year of observation from 1984 to 1998, using the statistical software, PAMCOMP

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<sup>®</sup> SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

(Person-years And Mortality COMputation Program), a free Windows 95/98/NT application that is available online.<sup>(261)</sup>

All cases of colorectal cancer diagnosed between 1984 and 1998 were used to calculate age, sex, and calendar year-specific cancer rates for the general population of Manitoba. Population denominator values were ascertained from the registrant database maintained at Manitoba Health. Colorectal cancer rates were determined by dividing the number of cases of colorectal cancer by the population denominator for each cell in the calendar year, sex-, and ten-year age group matrix. The collective PYAR for each age group/sex/calendar year of the gastric surgery cohort were then multiplied by the corresponding colorectal cancer rates in the general Manitoba population to determine the expected number of colorectal cancer cases. This process indirectly adjusted for age, sex, and calendar time effect when summed over all categories.

a) Adjustment for Induction

It is important for epidemiologic studies of cancer to consider that the carcinogenic process may take some time to develop. This is known as an “induction” period, and its primary use is in determining biological plausibility between the proposed exposure and the disease. However, use of a minimal induction period such as one year may also be used to indicate bias in studies where a medical intervention is the exposure of interest. This is because some cases of the disease may be detected shortly after the intervention as a result of the patient’s contact with the medical system. Consequently, an early induction period of one year was used in the current study to examine the likelihood of detection bias, the result of following up the gastric surgery patients more

intensively than the general population. Later induction periods of five and 10 years (i.e., more biologically plausible time intervals) were also implemented, as it has been shown that the rate of progression from polyps to cancer takes at least five years.<sup>(64-66)</sup> For the current project, the admission date for gastric surgery was the starting point for individuals to begin accruing PYAR; the end point of study included the development of colorectal cancer, death, or December 31, 1998, whichever occurred first. For example, to incorporate a one-year induction period into the data analysis, PYAR and observed cases of colorectal cancer only began accruing one year after gastric surgery. So, any persons reaching the end point of study within that one year time frame were removed from the study and did not contribute PYAR or observed cases of colorectal cancer to the final SIR calculation. Short interval times do not provide an appropriate induction period for the development of colorectal cancer, so tumours diagnosed soon after gastric surgery do not likely arise from exposure; rather they are probably due to medical attention that is received in the post-surgical period.

SIRs were calculated for various induction periods (0, 1, 5, and 10 years) to examine the length of time it takes for cancer to develop following gastric surgery. This means that the observed cases and PYAR were accrued beginning at 0, 1, 5, and 10, years, respectively, following gastric surgery. Induction periods of less than five years were used to indicate the presence of detection bias and were not considered biologically important.

b) 95% Confidence Intervals

The 95% confidence intervals of the SIRs were calculated on the assumption that the observed number of cases in each group follows a Poisson Distribution (i.e., the chance of the outcome (colorectal cancer diagnosis) is small relative to the large study population).<sup>(262)</sup> The values for the calculation of the 95% confidence intervals were taken from tables created by Bailar and Ederer.<sup>(263)</sup>

**E. Ethical Considerations**

This study was approved by the University of Manitoba Health Research Ethics Board, CancerCare Manitoba's Records and Registry Access Committee, and the Health Information Privacy Committee at Manitoba Health. The following measures were taken to ensure that the study met the ethical guidelines of these committees: (1) Employees of CancerCare Manitoba, including the project staff who extracted the data, swore oaths of confidentiality and protected all data related to this project accordingly; (2) Data from the provincial health department were extracted at Manitoba Health, and any statistical manipulations were performed on anonymized versions of the data; (3) Strict physical and computer-related security measures were put in place to protect the data files; electronic files were password protected and disks and printouts were locked in a secure filing cabinet; (4) Any papers or reports prepared for publication or distribution will be submitted to Manitoba Health for confidentiality review to ensure that the anonymity of individuals is preserved.

## CHAPTER IV

### RESULTS

#### A. Cancer File Preparation

##### *1. Colorectal Cancer File – From the Linked Cancer Registry, CancerCare Manitoba*

Appendix A presents two figures showing the cancer file preparation process. Manitoba's Linked Cancer Registry (April 2002 version) provided 10,400 records with a diagnosis of colorectal cancer from January 1, 1984 to December 31, 1998. Duplicate records (i.e., records with the same scrambled PHIN, indicating more than one tumour diagnosis for the same individual) were subsequently removed (346 records, representing 324 individuals) so that only the earliest date of diagnosis was retained. This resulted in a file consisting of 10,054 people with a diagnosis of colorectal cancer (4,786 females; 5,268 males).

All persons in the colorectal cancer cohort must have had an associated scrambled PHIN in their record in order to be merged with the hospital claims data file. Of the 10,054 persons with colorectal cancer, 308 did not contain a scrambled PHIN and were removed from the cohort. Performing a search by the first letter of the postal code in each record ('R' indicating residence in Manitoba) showed that 252 persons (81.8%) without a scrambled PHIN were residents outside of Manitoba. The remaining 56 people (18.2%) who were not assigned a scrambled PHIN were residents of Manitoba. Thus, the final colorectal cancer cohort contained 9,746 persons (4,643 females; 5103 males) with complete scrambled PHIN data for the time period 1984 to 1998.

## *2. Gastric Cancer File – From the Linked Cancer Registry, CancerCare Manitoba*

Gastric cancer (ICD-9 code 151) was also extracted from the Linked Cancer Registry at CancerCare Manitoba, resulting in 2,008 records. Two duplicate records were removed, leaving 2,006 people with a diagnosis of gastric cancer. Included in this total were two people with more than one gastric tumour diagnosis. Again, only the first date of diagnosis was retained for those people with more than one tumour diagnosis.

As with the colorectal cancer cohort, all persons in the gastric cancer cohort must have had an associated PHIN in their record in order to be merged with the hospital claims data file. Of the 2,006 persons with colorectal cancer, 74 did not contain a scrambled PHIN and were removed from the cohort. Performing a search by the first letter of the postal code in each record ('R' indicating residence in Manitoba) showed that 56 persons (75.7%) without a scrambled PHIN were residents outside of Manitoba. The remaining 18 people (24.3%) who were not assigned a scrambled PHIN were residents of Manitoba. Thus, the final gastric cancer cohort contained 1,932 persons (697 females; 1,235 males) with complete scrambled PHIN data for the time period 1984 to 1998.

## *3. Completeness of Birth and Diagnosis Date Information*

Each record in the colorectal and gastric cancer cohorts must have included a complete birth date and diagnosis date (if applicable) for the calculation of cancer rates, person-years at risk and ultimately, the expected number of cases used in the SIR. All records in both cohorts held birth year information. The majority of individuals in the colorectal and gastric cancer cohorts possessed complete birth dates (9,426, or 96.7%, and 1,874, or 97.0%), respectively. In the colorectal cancer cohort, 261 persons (2.7%)

were missing the day of birth and 59 persons (0.6%) were missing both the day and month of birth. The gastric cancer cohort showed similar results with 43 persons (2.2%) missing the day of birth and 15 persons (0.8%) missing the day and month of birth.

Diagnosis dates followed a similar pattern to the birth date information. Ninety-seven percent of the colorectal cancer cohort possessed complete diagnosis dates (2.5% were missing the day of diagnosis and 0.5% were missing the day and month of diagnosis). Similarly, 96.5% of the gastric cancer cohort contained complete diagnosis information (3.0% of records did not retain day of diagnosis and 0.5% lacked day and month of diagnosis).

CancerCare Manitoba maintains a high quality cancer registry, which is reflected in its low frequency of missing birth date information as well as the protocol for dealing with missing information. For those records where the month and/or day of birth or diagnosis cannot be located, they are assigned a default date of January 01. Because of the small number of dates containing default information, all records were retained for the calculation of person-years at risk.

#### *4. Final Cancer File – From the Linked Cancer Registry, CancerCare Manitoba*

The 9,746 persons with colorectal cancer were merged with the 1,932 persons with gastric cancer to create a single file of 11,678 tumour records. Further analysis determined that 33 persons (7 females; 26 males) were diagnosed with both colorectal and gastric cancer; these were reduced to one person-specific record (with the colorectal and gastric cancer information retained), resulting in a final cancer cohort of 11,645 individuals (5,333 females; 6,312 males).



## B. Descriptive Statistics – Final Cancer File

Figure 3 depicts the age-standardized colorectal cancer incidence rates (Canadian 1991 population), for the final cancer file from 1984 to 1998. The incidence rates peaked in 1985 and have, for the most part, since been declining; however, there has been a slight increase in incidence since 1997. As noted previously, despite this increase, the experience in Manitoba is not statistically different from national rates, as their 95% confidence intervals overlap.<sup>(43)</sup>

Figure 3. Age-Standardized Colorectal Cancer Incidence Rates per 100,000 (Canada 1991), Manitoba (Final Cancer File) and Canada, 1984-1998

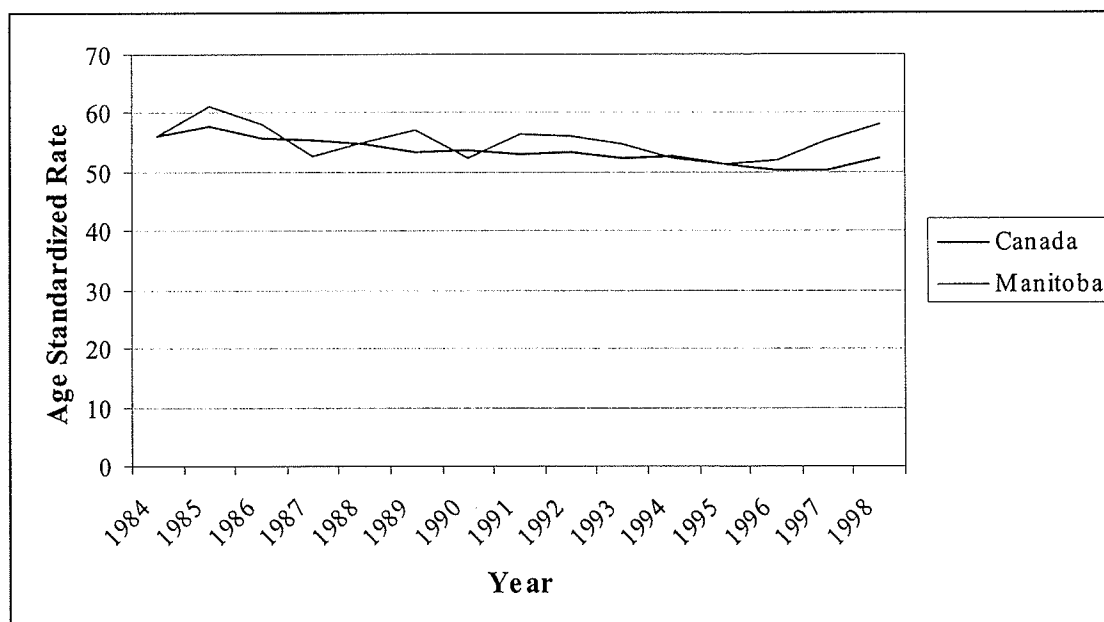


Table 3 describes the age and sex distribution of individuals in the colorectal cancer file, with persons 70 years of age and older having the highest crude colorectal cancer rates. This pattern is similar to that of Canada, with colorectal cancer being more commonly diagnosed in those aged 70 or older, as well as having a slightly higher incidence for males than females.<sup>(3)</sup>

Table 3. Crude Colorectal Cancer Rates per 100,000, by Age and Sex, Manitoba, 1984-1998 (N=9,746)

Age at Diagnosis	Sex		Total
	Females	Males	
0-19	0.1	0.0	0.1
20-29	1.0	1.3	1.1
30-39	4.4	5.4	4.9
40-49	20.6	24.5	22.6
50-59	67.9	85.3	76.6
60-69	143.4	228.1	183.3
70-79	269.1	382.6	318.0
80-89	370.7	526.2	427.9
90-99	398.4	560.9	443.4
100+	194.4	309.6	221.9

The majority of tumours were located in the distal colon (5,574, or 57.2%). Tumours of the proximal colon and unspecified sites comprised 33.5% and 9.3% of the cohort, respectively.

### **C. Gastric Surgery Cohort Preparation - Manitoba Health Care Insurance Plan Hospitalization Database**

The hospitalization dataset received from Manitoba Health contained 4,986 records. Data cleaning was performed in order to isolate the first gastric surgery for each individual in the cohort. An additional 223 records were removed as they were missing scrambled PHIN information and could not be linked to the cancer registry for colorectal cancer determination. Performing a search by the first letter of the postal code in each record ('R' indicating residence in Manitoba) showed that the majority of records (222, or 99.6%) without a scrambled PHIN represented individuals who resided outside of Manitoba. The remaining 4,763 records were sorted by scrambled PHIN and admission date and the SAS command, "nodupkey" was employed to remove duplicate records and to determine the earliest date for which a gastric surgery was performed (i.e., the first gastric surgery). This resulted in a gastric surgery cohort of 4,544 individuals (1,855 females; 2,689 males) which was used for deterministic data linkage with the linked cancer registry file.

### **D. Record Linkage of Hospital Claims and Cancer Registry Files**

#### *1. Data Cleaning*

A deterministic linkage strategy, based upon scrambled PHIN, was used for record linkage between the gastric surgery dataset (N=4,544) and the cancer registry file (N=11,645). It was determined that 612 persons (183 females; 429 males) had a diagnosis of gastric cancer prior to surgery and were eliminated from the cohort. In

addition, to ensure that all surgical procedures were performed for benign reasons, those persons receiving a gastric cancer diagnosis within three months of their surgery were also eliminated from the cohort. As a result, 361 persons (143 females; 218 males) were removed. Further data cleaning determined that there were 70 individuals (26 females; 44 males) diagnosed with colorectal cancer prior to having a gastric surgery and were, therefore, eliminated from the study.

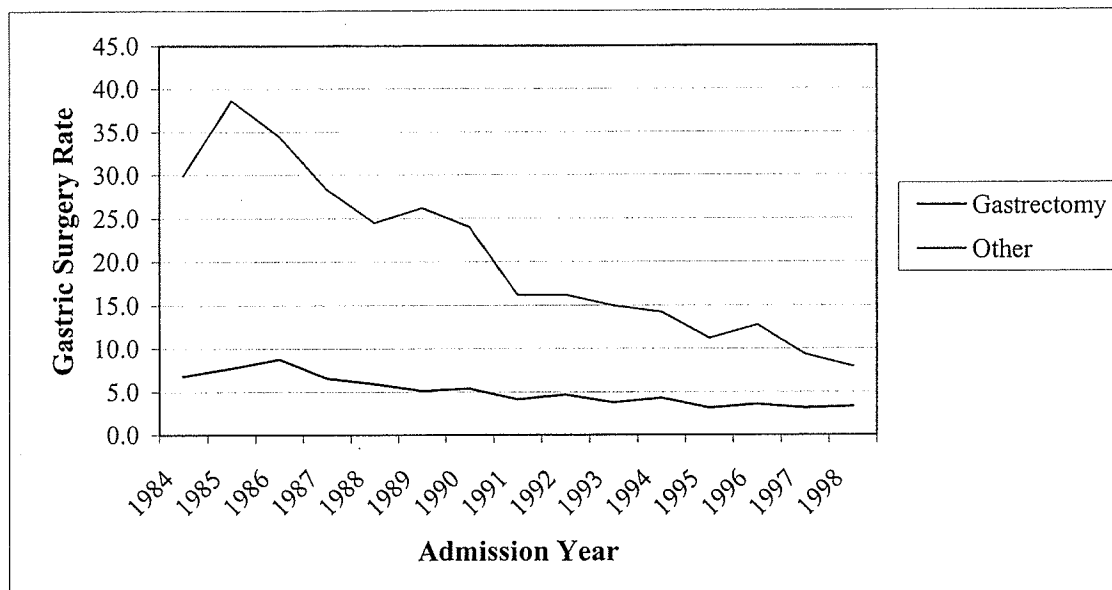
## 2. *Descriptive Statistics – Final Gastric Surgery Cohort*

### a) Gastric Procedures

Upon meeting the inclusion and exclusion criteria for the study, the final gastric surgery cohort was determined to consist of 3,501 individuals (1,503 females; 1,998 males). The number of gastric surgeries per admission record ranged from 1 to 4, resulting in a final tabulation of 4,366 surgeries for the cohort. The mean age of the surgical candidates was 53.5 years (median age=61.0 years).

The gastric surgeries were categorized in two groups: gastrectomy (i.e., the excision of part or all of the gastric mucosa) and “other” (e.g. vagotomy, pyloromyotomy, pyloroplasty, gastroenterostomy, and revision of gastric anastomosis) for further analysis. Figure 4 demonstrates the rate of gastric procedures (per 100,000) for males and females combined from 1984 to 1998. The majority of gastric surgeries were more commonly performed in earlier years; their subsequent decline can be attributed to the development of non-surgical treatments for benign gastric conditions, in particular, antibiotics for peptic ulcer disease. Chi-square analysis showed that there was no statistically significant difference in surgical frequency between males and females ( $\chi^2=3.4$ ,  $p=0.06$ ).

Figure 4. Crude Gastric Surgery Rates per 100,000, by Year of Admission, Manitoba, 1984-1998



#### b) Colorectal Cancer Diagnoses

There were 49 individuals (18 females; 31 males) diagnosed with colorectal cancer after receiving one or more gastric surgeries, which represented 1.4% of the gastric surgery cohort. The ages of these individuals at the time of surgery ranged from 35 to 91 years with an average age of 69.4 years (median=68.0 years). The average age at the time of colorectal cancer diagnosis was 71.3 years (median=71.0 years). The average length of time from gastric surgery to colorectal cancer diagnosis for the entire cohort was 1.9 years (median=19.0 days).

Females represented 36.7% of the colorectal cancer diagnoses. They ranged in age from 62 to 90 years at the time of diagnosis, with a mean age of 72.8 years (median=71.0 years). Males comprised 63.3% of the colorectal cancer cases; the age

range was from 35 to 91 years, with an average age at diagnosis of 67.5 years (median=67.0 years).

Proximal colorectal cancer was the most frequent diagnosis in the gastric surgery cohort (25, or 51.0%). Distal colorectal cancers and those of unspecified sites followed at 17, or 34.7% and 7, or 14.3%, respectively. The numbers of proximal and distal cancers were equally distributed between the sexes ( $\chi^2=0.9$ ,  $p=0.3$ ).

“Other” surgeries were most commonly associated with a colorectal cancer diagnosis (28 cases, or 57.1%). Chi squared analysis demonstrated that there was no statistically significant difference in the numbers of proximal and distal tumours associated with the gastrectomy and “other” categories ( $\chi^2=1.2$ ,  $p=0.3$ ).

## **E. Risk Estimates**

### *1. Risk of Developing Colorectal Cancer – Gastric Surgery Cohort vs. The General Manitoba Population*

#### a) Overall Risk

As previously mentioned, the colorectal cancer rates in the general Manitoba population were multiplied by the corresponding PYAR for each age group/sex/calendar period in order to determine the expected number of colorectal cancer cases. These, in turn, were used to calculate standardized incidence ratios (SIRs) for the gastric surgery cohort. Tables presenting the age-, sex-, and calendar year-specific colorectal cancer rates for the general population of Manitoba from 1984 to 1998 are found in Appendix B. The person-years at risk matrices and their corresponding SIRs for overall risk as well as each subsite and surgery type are listed in Appendices C, D, and E, respectively.

The gastric surgery cohort consisted of 3,501 individuals who, at zero years of induction, contributed 30,645.7 person-years for the study time period 1984 to 1998. There were 49 colorectal cancers observed during the study time frame. The expected number of colorectal cancers was calculated to be 51.3, resulting in a non-significant SIR of 1.0 (95% CI=0.7-1.3). SIRs analyzed by sex were also non-significant (females: SIR=0.9, 95% CI=0.5-1.4; males: SIR=1.0, 95% CI=0.7-1.4).

Table 4 summarizes the SIRs for all induction periods, by sex. After a one-year induction period, 143 individuals had already reached the study endpoint and, therefore, did not contribute any person-years-at risk. In addition, the 29 colorectal cancers diagnosed during this one-year time period were not included in the observed cases of colorectal cancer. This resulted in SIRs showing a statistically significant reduced risk of colorectal cancer following gastric surgery overall and for females (overall: SIR= 0.4, 95% CI=0.2-0.6; females: SIR=0.3, 95% CI=0.1-0.7; males: SIR=0.5, 95% CI=0.3-0.8). The SIRs remained significantly protective at five years of induction overall as well as for the sexes separately; the SIRs then became statistically non-significant at 10 years of induction for males and females separately.

Table 4. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	30,645.7	3,501	49	51.3	1.0	0.7-1.3
1	27,228.3	3,358	20	46.9	0.4	0.2-0.6
5	14,953.5	2,734	7	27.5	0.3	0.1-0.6
10	3,839.7	1,563	1	8.1	0.1	0.003-0.6
Females						
0	13,455.2	1,503	18	19.9	0.9	0.5-1.4
1	11,984.9	1,446	6	18.4	0.3	0.1-0.7
5	6,653.1	1,208	2	10.6	0.2	0.02-0.7
10	1,659.9	708	0	3.1	0.0	-
Males						
0	17,190.6	1,998	31	31.4	1.0	0.7-1.4
1	15,243.5	1,912	14	28.5	0.5	0.3-0.8
5	8,300.4	1,526	5	16.9	0.3	0.1-0.7
10	2,179.8	855	1	5.0	0.2	0.01-1.1

b) Risk by Induction Period and Colorectal Cancer Subsite

Tables 5 and 6 present the SIRs for each colorectal cancer subsite by induction period and sex. SIRs were elevated (statistically non-significant) for proximal tumours overall as well as for males and females individually, at zero years of induction. The SIRs began to decrease and became significantly protective at five years of induction for males and females combined. SIRs were 0.0 at ten years of induction as there were zero cases of proximal colorectal cancer for this category.



The SIRs for distal tumours showed a reduced risk (statistically non-significant) at zero years of induction for both sexes combined and individually. The SIRs then demonstrated a statistically significant reduced risk of distal colorectal cancer development at one and five years of induction for males and females combined, and for males separately. Data available for ten years of induction became non-significant.

Table 5. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Proximal Colon Cancer, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	30,645.7	3,501	25	17.8	1.4	0.9-2.1
1	27,228.3	3,358	7	16.2	0.4	0.1-1.0
5	14,953.5	2,734	2	9.6	0.2	0.02-0.7
10	3,839.7	1,563	0	2.9	0.0	-
Females						
0	13,455.2	1,503	11	8.1	1.4	0.7-2.5
1	11,984.9	1,446	3	7.4	0.4	0.1-1.2
5	6,653.1	1,208	0	4.4	0.0	-
10	1,659.9	708	0	1.4	0.0	-
Males						
0	17,190.6	1,998	14	9.7	1.4	0.8-2.3
1	15,243.5	1,912	4	8.8	0.5	0.1-1.3
5	8,300.4	1,526	2	5.2	0.4	0.05-1.4
10	2,179.8	855	0	1.5	0.0	-

Table 6. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Distal Colon Cancer, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	30,645.7	3,501	17	28.5	0.6	0.3-1.0
1	27,228.3	3,358	10	25.9	0.4	0.2-0.7
5	14,953.5	2,734	4	15.2	0.3	0.1-0.8
10	3,839.7	1,563	1	4.5	0.2	0.01-1.1
Females						
0	13,455.2	1,503	5	9.4	0.5	0.2-1.2
1	11,984.9	1,446	3	8.5	0.4	0.1-1.2
5	6,653.1	1,208	2	4.9	0.4	0.05-1.4
10	1,659.9	708	0	1.4	0.0	-
Males						
0	17,190.6	1,998	12	19.1	0.6	0.3-1.0
1	15,243.5	1,912	7	17.4	0.4	0.2-0.8
5	8,300.4	1,526	2	10.3	0.2	0.02-0.7
10	2,179.8	855	1	3.1	0.3	0.01-1.7

c) Risk by Induction Period and Gastric Surgery Type

Tables 7 and 8 summarize the risk of developing colorectal cancer by surgery type (i.e., gastrectomy or “other”) for all induction periods, by sex. The SIRs at zero years of induction indicated a statistically significant increased colorectal cancer risk post-gastrectomy for both sexes combined and for males individually. All subsequent induction periods showed a non-significant decrease in colorectal cancer risk. The SIRs for the “other” surgeries category showed that there was a significantly reduced risk of

colorectal cancer at one and five years of induction for both sexes combined as well as separately. SIRs for ten years of induction were 0.0 as there were no observed cases of colorectal cancer.

Table 7. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Colorectal Cancer, in Individuals Undergoing Gastrectomy, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	4,682.2	565	21	11.1	1.9	1.2-2.9
1	4,142.6	523	8	9.9	0.8	0.3-1.6
5	2,265.2	408	2	5.8	0.3	0.04-1.1
10	605.6	240	1	1.8	0.6	0.02-3.3
Females						
0	2,183.0	260	7	4.4	1.6	0.6-3.3
1	1,935.4	238	2	3.9	0.5	0.01-1.8
5	1,070.8	191	1	2.3	0.4	0.01-2.2
10	280.1	113	0	0.7	0.0	-
Males						
0	2,499.2	305	14	6.7	2.1	1.1-3.5
1	2,207.2	285	6	6.0	1.0	0.4-2.2
5	1,194.4	217	1	3.5	0.3	0.01-1.7
10	325.5	127	1	1.1	0.9	0.02-5.0

Table 8. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Colorectal Cancer, in Individuals Undergoing "Other" Gastric Surgeries, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	23,271.9	2,641	28	35.2	0.8	0.5-1.2
1	20,684.6	2,548	12	31.9	0.4	0.2-0.7
5	11,339.5	2,090	5	18.9	0.3	0.1-0.7
10	2,855.6	1,173	0	5.5	0.0	-
Females						
0	10,059.7	1,103	11	13.4	0.8	0.4-1.4
1	8,975.1	1,072	4	12.1	0.3	0.1-0.8
5	5,000.7	910	1	7.2	0.1	0.003-0.6
10	1,222.3	528	0	2.1	0.0	-
Males						
0	13,212.1	1,538	17	21.8	0.8	0.5-1.3
1	11,709.4	1,476	8	19.8	0.4	0.2-0.8
5	6,338.8	1,180	4	11.7	0.3	0.1-0.8
10	1,633.3	645	0	3.4	0.0	-

d) Risk by Induction Period, Gastric Surgery Type, and Colorectal Cancer Subsite

Tables 9 and 10 describe the risk of developing proximal and distal colon cancer after undergoing gastrectomy. A statistically significant SIR was present for proximal cancer for both sexes combined, at zero years of induction. After a one year induction period was taken into account, SIRs for proximal colon cancer decreased below 1.0 and became non-significant, possessing wide confidence intervals. SIRs for distal colon cancer remained above 1.0 (statistically non-significant) overall and for males at zero and

one year of induction; the SIRs decreased at the five- year induction period and then increased to values above 1.0 (statistically non-significant) at ten years of induction. Similarly, the SIRs for females began to increase at five years of induction, although it was non-significant. The person-years at risk matrices and corresponding SIRs for each surgery-subsite combination can be found in Appendix F.

Table 9. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Proximal Colorectal Cancer, in Individuals Undergoing Gastrectomy, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	4,682.2	565	9	3.9	2.3	1.1-4.4
1	4,142.6	523	1	3.5	0.3	0.01-1.7
5	2,265.2	408	0	2.1	0.0	-
10	605.6	240	0	0.6	0.0	-
Females						
0	2,183.0	260	4	1.8	2.2	0.6-5.6
1	1,935.4	238	1	1.6	0.6	0.02-3.3
5	1,070.8	191	0	1.0	0.0	-
10	280.1	113	0	0.3	0.0	-
Males						
0	2,499.2	305	5	2.1	2.4	0.8-5.6
1	2,207.2	285	0	1.9	0.0	-
5	1,194.4	217	0	1.1	0.0	-
10	325.5	127	0	0.3	0.0	-

Table 10. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Distal Colorectal Cancer, in Individuals Undergoing Gastrectomy, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	4,682.2	565	9	6.2	1.5	0.7-2.8
1	4,142.6	523	6	5.5	1.1	0.4-2.4
5	2,265.2	408	2	3.3	0.6	0.1-2.2
10	605.6	240	1	1.0	1.0	0.03-5.6
Females						
0	2,183.0	260	1	2.1	0.5	0.01-2.8
1	1,935.4	238	1	1.8	0.5	0.01-2.8
5	1,070.8	191	1	1.1	0.9	0.02-5.0
10	280.1	113	0	0.3	0.0	-
Males						
0	2,499.2	305	8	4.1	2.0	0.9-3.9
1	2,207.2	285	5	3.7	1.4	0.5-3.3
5	1,194.4	217	1	2.2	0.5	0.01-2.8
10	325.5	127	1	0.7	1.5	0.04-8.3

Tables 11 and 12 demonstrate the SIRs for proximal and distal colorectal cancer by "other" surgeries. SIRs were elevated, but statistically non-significant, for proximal cancers in males and females at zero years of induction. A gradual decrease in SIRs (statistically non-significant) was seen at all subsequent induction periods. SIRs for distal cancers showed a statistically significant reduced risk overall and for males at zero, one, and five years of induction.

Table 11. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Proximal Colorectal Cancer, in Individuals Undergoing "Other" Surgeries, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	23,271.9	2,641	16	12.2	1.3	0.7-2.1
1	20,684.6	2,548	6	11.1	0.5	0.2-1.1
5	11,339.5	2,090	2	6.6	0.3	0.04-1.1
10	2,855.6	1,173	0	1.9	0.0	-
Females						
0	10,059.7	1,103	7	5.5	1.3	0.5-2.7
1	8,975.1	1,072	2	5.0	0.4	0.05-1.4
5	5,000.7	910	0	3.0	0.0	-
10	1,222.3	528	0	0.9	0.0	-
Males						
0	13,212.1	1,538	9	6.7	1.3	0.6-2.5
1	11,709.4	1,476	4	6.1	0.7	0.2-1.8
5	6,338.8	1,180	2	3.6	0.6	0.1-2.2
10	1,633.3	645	0	1.0	0.0	-

Table 12. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals for Distal Colorectal Cancer, in Individuals Undergoing "Other" Surgeries, by Years of Induction and Sex, 1984-1998

Years of Induction	PYAR	Individuals	Observed CRC	Expected CRC	SIR	95% Confidence Interval
Males and Females						
0	23,271.9	2,641	8	19.7	0.4	0.2-0.8
1	20,684.6	2,548	4	17.7	0.2	0.1-0.5
5	11,339.5	2,090	2	10.4	0.2	0.02-0.7
10	2,855.6	1,173	0	3.1	0.0	-
Females						
0	10,059.7	1,103	4	6.4	0.6	0.2-1.5
1	8,975.1	1,072	2	5.7	0.3	0.04-1.1
5	5,000.7	910	1	3.3	0.3	0.01-1.7
10	1,222.3	528	0	1.0	0.0	-
Males						
0	13,212.1	1,538	4	13.3	0.3	0.1-0.8
1	11,709.4	1,476	2	12.0	0.2	0.02-0.7
5	6,338.8	1,180	1	7.1	0.1	0.003-0.7
10	1,633.3	645	0	2.1	0.0	-



## CHAPTER V

### DISCUSSION

#### A. Risk Estimates – Gastric Surgery Cohort vs. The General Manitoba Population

The association between gastric surgery and colorectal cancer risk was addressed by linking anonymized records from Manitoba Health's databases to the cancer registry at CancerCare Manitoba, for the time period 1984 to 1998. The risk of colorectal cancer in the gastric surgery cohort was compared to the general population of Manitoba by calculating standardized incidence ratios (SIRs), which were adjusted for age, sex, and calendar year using the person-years at risk methodology. SIRs were calculated for induction periods of 0, 1, 5, and 10 years to account for medical detection bias and to investigate the risk estimates at more biologically plausible time periods (especially 10 years post-surgery).

The gastric surgery cohort consisted of 3,501 individuals who contributed 30,645.7 person-years at risk. Based on the colorectal cancer experience of the Manitoba population, it was expected that 51.3 cases of colorectal cancer would be found in the gastric surgery cohort, at zero years of induction. A total of 49 cases were observed in the entire cohort, yielding a statistically non-significant SIR of 1.0 (95% CI=0.7-1.3) and indicating that there was no increased risk of developing colorectal cancer following gastric surgery. Addressing colorectal cancer risk by sex for all combined subsites also showed statistically non-significant SIRs for both females and males at 0.9 (95% CI=0.5-

1.4) and 1.0 (95% CI=0.7-1.4), respectively. These findings are consistent with others in the literature.<sup>(23-27)</sup>

However, further analysis showed that many of the colorectal cancer cases (N=29, or 59.2%) in the current study were diagnosed less than one year after surgery.

Excluding these cases and adjusting the person-years for a one-year induction period led to a statistically significant SIR of 0.4 (95% CI=0.2-0.6) for the entire gastric surgery cohort, and 0.3 (95% CI=0.1-0.7) and 0.5 (95% CI=0.3-0.8) for females and males, respectively. Risk estimates decreased with longer induction periods. However, the SIRs had increasingly wide confidence intervals due to the low observed incidence of colorectal cancers, which contributed substantially to insufficient power to detect a statistically significant risk.

For the current study, such a high number of cancers diagnosed within one year of gastric surgery indicates that the tumours may not have developed as a result of a gastric surgery exposure since a period of one year is typically not enough time for colorectal cancer carcinogenesis.<sup>(64-66)</sup> It is more plausible to conclude that the high number of colorectal cancer diagnoses was either due to: (1) medical attention received in the post surgical period, indicating detection bias, (2) misdiagnoses (i.e., the patients' symptoms for which the gastric surgeries were performed were not due to benign gastric disease, rather they were secondary to the already pre-existing colorectal cancer), or (3) a gastric surgery performed in conjunction with a colorectal surgery, the latter ultimately detecting a colorectal malignancy which was reported to the cancer registry following a short delay. The last possibility was considered because 53% of the colorectal cancer cases in the cohort had a post-operative diagnosis within 20 days. It is clinically plausible that

gastric and colorectal procedures may be performed simultaneously, and although current cancer registration rules indicate that a malignancy found during surgery should be assigned a date of diagnosis on the date of surgery, this may not have occurred consistently in the past. Until 1992, if the surgery date was not available for cancer registration, then the discharge date was recorded as the most definitive diagnosis date.<sup>(255)</sup> Because the current study used admission date as a proxy for the surgery date, there is the potential for a time interval to exist between the dates of admission for surgery and colorectal cancer diagnosis, even though they, in fact, occurred simultaneously.

The data from the current study suggest that gastric surgery is not putting individuals at greater risk for colorectal cancer development, rather, it is exerting a protective effect. Several studies in the literature have also found a protective effect five to 20 years after gastric surgery.<sup>(18-22)</sup> Two studies<sup>(20,21)</sup> found a significant protective effect for the first 20 years post-surgery, after which they observed a statistically significant increased risk. Several additional studies also demonstrated similar results (i.e., a protective effect for the first 20 years with a subsequent excess risk), although they did not reach statistical significance.<sup>(22-24,26,)</sup> It has been hypothesized that because gastric surgery alters the emptying rate of the stomach<sup>(264)</sup> and increases fecal transit times,<sup>(169,170)</sup> the colon would be less exposed to carcinogenic substances, resulting in a decreased risk of colorectal cancer. Furthermore, it has been suggested that changes in eating habits, either as a result of the disappearance of gastric symptoms or post-operative sequelae, may contribute to a reduction in colorectal cancer risk.<sup>(22)</sup> The findings of the current study support these hypotheses. However, the reduced colorectal cancer risk seen

in the current study may also have been due to medical attention bias. Individuals in the gastric surgery cohort may have received closer post-operative follow-up (e.g. colorectal screening and polypectomy at the pre-malignant stage) than the general population, which actually protected them from progressing further along the adenoma-carcinoma sequence.

Although the main analysis suggested a protective effect over time, one of the sub-analyses (gastrectomy and distal cancer) suggested that an increase in risk may be occurring at 10 years following this specific type of gastric surgery. While this assessment should not be over-emphasized as the results were not statistically significant, it is interesting to consider what may contribute to such a finding. Several studies have proposed that post-operative sequelae (e.g. dietary and pH changes) were responsible for the increased colorectal cancer risk observed 15 to 20 years after surgery, as opposed to some other environmental confounder.<sup>(18,20-22)</sup> Caygill and colleagues (1987) mentioned the possibility of an additional predisposing factor (e.g. smoking) common to both the gastric surgery and colorectal cancer cohorts for the increased colorectal cancer risk 20 years after gastric surgery. However, if the increased colorectal cancer risk was caused by a pre-existing factor such as smoking, then there would have been a steady increase in risk throughout the entire post-operative period, rather than the protective effect observed in the first 20 years of the study. They argued that factors associated with gastric surgery (e.g. changes in eating patterns and gastric pH and bacterial flora) were associated with the increased risk, rather than an environmental confounder such as smoking.<sup>(20)</sup> If this kind of effect was operating, a statistically significant excess colorectal cancer risk at later induction periods would have been expected in the current study; however, no such

results were observed. It is possible that longer follow-up periods are necessary in order to detect this risk, as indicated by previous studies.<sup>(18,20-22)</sup>

Earlier studies suggest that, according to the bile acid hypothesis, the risk for right colon cancer would be greatest since the right colon would be in closest proximity to carcinogenic secondary bile acids. The risk for left colon and rectal cancer would be least since they are further away from the bile acid source. Two previous studies addressing the issue of gastric surgery and colon cancer subsite<sup>(17,21)</sup> found an increasing risk from the rectum to the right colon. The current study shows an elevated risk (non-significant) for proximal colon cancer at zero years of induction, with a decrease in risk with each subsequent induction period, ultimately ending with a protective effect overall at five years of induction. SIRs for distal tumours were below 1.0 (non-significant) at zero years of induction and became significantly low at one and five years of induction overall and for males. These observations may be consistent with suggestions that factors associated with proximal colon cancer are different from distal cancer.<sup>(6,49,56)</sup> Furthermore, the low risk estimates for distal tumours may be due to medical attention bias. For example, if a patient's gastrointestinal symptoms were not resolved by gastric ulcer investigation and treatment, then colorectal screening and polypectomy may have been the next steps taken, which would have prevented the colonic epithelium from progressing to a malignant stage - especially in the distal colon, which is easier to investigate.

Addressing colorectal cancer risk by surgery type showed that gastrectomy was associated (statistically significant) with a higher incidence of colorectal cancer overall (especially proximal colorectal cancer) in the zero year induction period for males and females combined. SIRs then decreased to non-significant values after a one year

induction period was employed; interestingly, gastrectomy did not exert a significantly protective effect at any induction period. Again, these results may indicate: (1) the presence of medical detection bias, (2) a misdiagnosis of the condition that initially determined the need for gastric surgery, (3) a gastric surgery was performed in conjunction with a colorectal cancer surgery, or (4) insufficient power to detect a significant difference due to the small number of observed colorectal cancers. Several cohort studies have also demonstrated a similar lack of association after follow-up periods were taken into account.<sup>(17,23-27)</sup> For example, Eide and colleagues (1991) found that there was an overall statistically significant increased risk for proximal colon cancer following gastrectomy and/or gastroenterostomy. However, after incorporating post-operative latency periods and conducting a time-trend analysis, it was discovered that there was no increasing risk of colorectal cancer with the passage of time, which would be expected if the increased risk was solely due to the changes in bile acid profiles following gastric surgery. In fact, they found a protective effect 30 years post-operation.<sup>(17)</sup> Two additional studies by McLean Ross (1982) and Inokuchi (1984) found significantly greater number of deaths from colorectal cancer overall<sup>(10,14)</sup> and in males<sup>(14)</sup> who had gastrectomy, at zero years of induction. These studies, however, only reported standardized mortality ratios to explain overall risk in the cohort and did not calculate risks for latency periods.<sup>(10,14)</sup> On the other hand, Mizusawa (1990) did use a one year induction period to calculate the incidence of colorectal cancer in patients who underwent partial or sub-total gastrectomy, and found it to be significantly increased.<sup>(11)</sup> However, further induction periods were not employed, so it is not possible to determine whether these risk estimates would have remained significant over time or if they would

have decreased in a similar fashion to those in the present study, which suggest that gastrectomy is not associated with increased colorectal cancer risk.

Gastrectomy was also associated with higher risk estimates (although statistically non-significant) for distal colorectal tumours in the zero and one year induction period for males and females combined as well as males alone, but not for females alone. Although the risk estimates were not significantly different from the null value, indicating that they could be the same for both sexes, it is interesting to speculate as to what may cause males and females to have a different gastric surgery-colorectal cancer relationship. For example, differences in the direction of risk for males and females may be due to variations in environment (diet, physical activity, smoking and alcohol use, health care utilization practices) and/or biological influences (hormones) between the sexes. For example, it has been shown that parity,<sup>(50)</sup> oral contraceptives,<sup>(216)</sup> and hormone replacement therapies<sup>(265)</sup> may contribute to a protective effect against colorectal cancer in women. Alcohol consumption tends to be higher in men and may contribute to their higher rates of left sided colon cancers.<sup>(182)</sup> However, data were not available for the current study to directly address these hypotheses.

The “other” surgeries category showed a statistically significant decreased risk for distal tumours in males at zero, one, and five years of induction, suggesting that these gastric surgeries exert a protective effect, primarily in this part of the colon. Risks for females were also below 1.0 for all induction periods, although they were not statistically significant. Given that inadequate power may well have led to the non-significant risk estimates for females, it is of interest that the results in this study differed according to the type of gastric surgery performed, which might suggest that a different mechanism is

in effect. Several additional studies also addressed the association between surgeries other than gastrectomy (e.g. vagotomy) and colorectal cancer risk.<sup>(12,13,15,16,21)</sup> Three<sup>(12,13,15)</sup> out of five studies that found an increased mortality or incidence of colorectal cancer did not employ latency periods, making it difficult to determine if these overall estimates were a true reflection of colorectal cancer risk. However, the majority of previous studies that analyzed data according to surgery type differed from the current study in that they found protective effects for both gastrectomy and vagotomy.<sup>(19-21)</sup> The current study's results were suggestive of increasing risk for gastrectomy and decreasing risk for "other" surgeries. This relationship appeared to differ by colon subsite, which may have been due to a biological effect, but could also have been due to the presence of detection bias.

All but two previous studies<sup>(11,24)</sup> addressed the gastric surgery/colorectal cancer hypothesis in relationship to the diagnosis of peptic ulcer disease. Only one study (Fisher, 1994) addressed the issue of gastric surgery in a similar manner to the current study (i.e., they examined the risk of colorectal cancer following gastric surgery for all benign conditions, not only for peptic ulcers).<sup>(24)</sup> In addition to treating peptic ulcers, gastric surgery has been performed for other benign conditions such as gastritis, esophageal stricture, and pyloric stenosis.<sup>(266)</sup> These individuals are also potentially at increased risk for colorectal cancer, under the bile acid hypothesis, which proposes that gastric surgery initiates metabolic changes in the gastrointestinal tract which leads to a carcinogenic environment. Therefore, limiting the cohort solely to those diagnosed with peptic ulcer disease would exclude potentially at-risk individuals under the proposed hypothesis. The second study (Mizusawa, 1990) examined colorectal cancer risk in



patients who received gastric surgery for benign and/or malignant conditions.<sup>(11)</sup> This methodology may bias results as studies have shown that individuals with a primary cancer (e.g. gastric cancer) are more likely to develop a second primary cancer (e.g. colorectal cancer).<sup>(267,268)</sup> For these reasons, the current study used a methodology similar to the one employed by Fisher (1994) and analyzed data on gastric surgeries performed for benign conditions. The surgeries chosen for the current study could potentially alter bile acid profiles, in accordance with the bile acid hypothesis.

When looking at a surgical intervention, one area of concern is that the underlying disease (i.e., the reason for surgery) is really responsible for the association with the cancer outcome. In the case of gastric surgery and colorectal cancer, it has been suggested that the underlying condition (i.e., peptic ulcer), as opposed to the gastric surgery, could be responsible for the association, but these arguments have all focused on explaining any observed increase in colorectal cancer risk.<sup>(10)</sup> In fact, only one study addressed this suggestion explicitly: a case-control study by Bundred and colleagues (1985) had a similar prevalence of ulceration among index cases and controls, which made it unlikely that the ulcer was responsible for the excess colorectal cancer mortality discovered in their study.<sup>(15)</sup> Others have provided evidence that the proposed carcinogenic effect (altered bile acid profiles) is found following gastric surgery, but not in those with ulcers who have not had surgery. Poxon and colleagues (1986) showed that deoxycholic acid was significantly higher among individuals who had undergone gastric surgery, when compared with patients with gastric ulcer and no gastric surgery as well as controls. This study also found no significant difference in bile acid profiles between gastric ulcer patients who did not have surgery and controls, which suggests that the

peptic ulcer behaved “normally” and the gastric surgery was responsible for the alteration in bile acids.<sup>(269)</sup> A recent study (Zhang, 2004) compared bile acid concentrations between pre- and post-operative gastric surgery patients and found that bile acid concentrations were significantly higher after surgery, again supporting the notion that gastric surgery may be responsible for creating or promoting a carcinogenic environment.<sup>(270)</sup> A study conducted by Watt and colleagues (1984) also supports gastric surgery’s role in altering bile acid profiles and potentiating colorectal cancer development. They found that, after gastric surgery, the concentration of bile acids was significantly higher in individuals who had intestinal metaplasia or severe dysplasia when compared to a group who had only mild gastritis.<sup>(271)</sup> This theory was investigated further by Makino (1984), by comparing the concentration of fecal bile acids in patients with peptic ulcer vs. patients with colon cancer. This study found that the concentration of secondary bile acids was significantly higher in patients with colon cancer than in patients with peptic ulcer disease, indicating that another mechanism other than peptic ulcer influences the concentration of the potentially carcinogenic secondary bile acids.<sup>(272)</sup>

It has also been suggested that *Helicobacter pylori* (*H. pylori*), the bacterium recently discovered to be involved in the etiology of peptic ulcer disease, may confound the gastric surgery-colorectal cancer connection. *H. pylori*’s effect on bile acid profiles has not been directly described in the literature. However, if one assumes that the majority of persons with peptic ulcer disease are also positive for *H. pylori*, then the literature on peptic ulcers and bile acid profiles can be extrapolated to carriers of *H. pylori* – in particular, that bile acid profiles are significantly higher among individuals

who have had gastric surgery when compared to controls or individuals with peptic ulcers and no surgery.<sup>(269,270,272)</sup> This suggests that if there is a bile acid connection in colorectal cancer carcinogenesis, then it is through the surgery rather than the peptic ulcer or, by extension, *H. pylori*.<sup>(272)</sup> This information supports the current study's assertion that the gastric surgery, not the diagnosis of peptic ulcer disease, was the most important consideration in conducting the analyses.

A second etiologic pathway in colorectal carcinogenesis involving *H. pylori* has been recently hypothesized. Several studies suggest that *H. pylori* directly increases gastrin levels, a recognized mitogen of colonic epithelium.<sup>(273-276)</sup> If this is the case, then the underlying condition (*H. pylori* infection) may confound any relationship found between gastric surgery and colorectal cancer risk. In order for *H. pylori* to be a confounder, it must be proven to have a relationship with colorectal cancer development. Controversy remains in the literature as to *H. pylori*'s role in colorectal carcinogenesis.<sup>(277-281)</sup> For example, a case-control study showed that patients with colorectal cancer had significantly higher levels of circulating gastrin, regardless of their *H. pylori* status, suggesting that a factor other than *H. pylori* was associated with increased gastrin levels and colorectal cancer risk.<sup>(280)</sup> A study by Penman (1994) also supports this theory. This case-control study showed that the peak gastrin levels were not significantly different in colorectal cancer tumour patients and controls after controlling for *H. pylori* status (i.e., prevalence of *H. pylori* was the same in both cases and controls).<sup>(281)</sup>

However, the current study did not find a general indication of increased risk of colorectal cancer; rather, the apparent effect was towards protection. Therefore, the factors that may underlie this association must be considered. One possibility is that individuals undergoing gastric surgery are now in contact with the health care system and, therefore, are assigned to have regular check-ups and other procedures, such as endoscopy with polypectomy, that are ultimately protective in terms of colorectal cancer development. Another possible explanation is that there is a confounder in effect, one which increases the requirement for gastric surgery while simultaneously protecting the individual from colorectal cancer. An excellent candidate for such a confounder is non-steroidal anti-inflammatory drugs (NSAIDs). Use of these drugs might lead to ulceration and, therefore, the need for gastric surgery, but their use has also been shown to provide protection in terms of colorectal cancer. There are no data available in this study to investigate either of these hypotheses, but they remain plausible explanations of why and how a protective effect could be observed in this study.

## B. Strengths and Limitations of the Current Study

### 1. Strengths

The current study had several advantages over previous ones, including its historical cohort design, population-based focus, and outcome parameter (colorectal cancer incidence instead of mortality). The use of mortality<sup>(12-14,18,20,21,25,27)</sup> rather than incidence as an endpoint in several previous studies may have limited their analyses. Data from incidence-based registries have significant advantages over mortality-based data. Incidence-based registries identify each case at the time a diagnosis of cancer is reported, rather than at the time of death, which results in a more complete count of all cancers that have occurred, regardless of survival.<sup>(282)</sup> As well, mortality data tend to lack precise and complete diagnoses when compared to incidence-based data.

Another significant advantage to this study was that it used induction periods of 0, 1, 5, and 10 years; the one year induction period was used to investigate medical detection bias and/or a misdiagnosis, while the later induction periods were implemented to allow for a biologically plausible duration for colorectal carcinogenesis. It is important to address the issue of induction as studies have suggested that it takes a minimum of five years for colorectal carcinogenesis after exposure.<sup>(64-66)</sup> Several previous studies did not take into account the time interval between gastric surgery and colorectal cancer diagnosis.<sup>(10,12-15,19)</sup> This may have resulted in a significantly increased risk estimate which may have been falsely interpreted as a true association between gastric surgery and the development of colorectal cancer. This was the experience of the current study (for gastrectomy) at zero years of induction, with significant SIRs for both sexes combined.

However, after a one-year induction period was implemented, all risk estimates became non-significant, indicating that surgery may not have been the cause of the observed colorectal cancers, since one year is not usually sufficient time for colorectal carcinogenesis. Several additional studies have shown non-significant<sup>(24-27)</sup> and even protective effects<sup>(18,19,22)</sup> after one or more years of induction. A study by Mizusawa and colleagues (1990) used a one-year induction period for their analysis, after which, a significant relative risk remained (1.96,  $p < 0.003$ ).<sup>(11)</sup> However, further induction periods were not employed, so it is difficult to interpret this risk estimate as a definitive representation of a positive association between gastric surgery and colorectal cancer development.

The advantage of using linked administrative data for the current study was that participant recall regarding exposure (gastric surgery) and outcome (colorectal cancer) was not necessary. This eliminated recall bias, a common source of bias in epidemiological research. Furthermore, linkage of the gastric surgery cohort with the cancer registry was carried out by an individual external to the research team, in a manner that was blind to the exposure-disease relationship. This approach prevented investigator bias, in which outcomes are assessed differentially according to exposure.

The accuracy of deterministic data linkage is reflected in the quality of the data being linked. As previously mentioned in Chapter 3, the high quality and validity of the Manitoba Health data files has been confirmed by several research studies,<sup>(241,246,248-253)</sup> providing reassurance as to its comprehensiveness and accuracy of entry into the data base.<sup>(254)</sup> CancerCare Manitoba also maintains a high quality of cancer registration, which is reflected in the low number of cases identified through death certificate only.

There was a small percentage of individuals in the cancer registry who were missing complete birthdates and diagnosis dates. This may have slightly under-estimated person-years at risk, but because of the small number of dates containing default information, all records were maintained. Overall, there was a high degree of accuracy in both databases, allowing for a deterministic approach with minimal underlinkage.

## 2. *Limitations*

While the proposed study has significant advantages, it is not without limitations. Administrative data used in this study provided no information on environmental and lifestyle factors (e.g., diet, physical activity, smoking habits, socioeconomic status) which may confound the association between gastric surgery and colorectal cancer. For example, if dietary habits, such as, high fat and low fiber intake,<sup>(123,124,283)</sup> and lifestyle factors, such as smoking<sup>(111,159,171-178)</sup> and low physical activity,<sup>(165-168)</sup> are more common in the gastric surgery cohort compared to the general population, and are also associated with increased colorectal cancer risk, then resultant SIRs would be lower once these confounders were taken into account. For instance, it has been shown that patients with peptic ulcer disease are often habitual smokers and usually do not quit after gastric surgery.<sup>(10)</sup> As previously mentioned, smoking has also been implicated in colorectal cancer development, although the association is tenuous. Smoking may, therefore, be the reason for the increased risk in colorectal cancer observed at zero years of induction (for gastrectomy) in the current study. The prevalence of the other potential confounders and the degree to which they would influence colorectal risk in the gastric surgery cohort is unknown.

On the other hand, adjusted SIRs may increase for the gastric surgery cohort after adjusting for protective confounders. For example, NSAID use, which is known to cause peptic ulceration,<sup>(202-207)</sup> and exogenous hormone use by women<sup>(217-219)</sup> may protect gastric surgery patients from developing colorectal cancer. Furthermore, a low body weight has been reported as a protective factor in colorectal cancer<sup>(153-155)</sup> and loss of body weight has been documented in individuals after gastric surgery.<sup>(284)</sup> It is possible that these protective confounders are masking the true risk of colorectal cancer development after surgery; however, the current study was unable to test this hypothesis.

The occurrence of cholecystectomy at the time of gastric surgery is another potential confounder, as it has been reported that cholecystectomy may increase colorectal cancer risk,<sup>(8,9,30,222-224)</sup> although there is substantial evidence to the contrary.<sup>(285-288)</sup> However, a search of the literature was unable to ascertain the frequency of concurrent cholecystectomy and gastric surgery. If cholecystectomy was a true confounder in the gastric surgery-colorectal cancer debate, then the adjusted SIRs would be lower than those indicated in the current study.

This study ensured that all procedures performed on the cohort were for benign reasons. This is because it has been shown that individuals diagnosed with a primary cancer are at increased risk for developing a second primary cancer.<sup>(267,268)</sup> In accordance with previous studies on this subject, the current project did not explore cancer diagnoses in additional organs prior to gastric surgery other than gastric and colorectal malignancies. It was determined that a small proportion (9.4%) of the gastric surgery cohort was diagnosed with a second primary cancer (other than gastric and/or colorectal cancer) prior to surgery, and may have already been at increased colorectal cancer risk.



However, in order for these other cancers to be considered confounders, they would have to be associated with the exposure (gastric surgery) in the population from which the outcome (colorectal cancer) cases were derived. The degree to which additional cancers, such as breast, lung, or non-melanoma skin cancers, for example, are associated with the need for gastric surgery is unknown.

As previously mentioned, the current study used induction periods of 0, 1, 5, and 10 years to allow for the appropriate follow-up period for colorectal carcinogenesis and to address the issue of detection bias and/or misdiagnosis. Previous studies have suggested that it may take five or more years to detect colorectal cancer after gastric surgery.<sup>(11,20,21)</sup> In the current study, there were fewer subjects at the biologically important latency periods of five and 10 years, which may have led to low power and the inability to detect a truly statistically significant result. As well, it is possible that induction periods of 15 and 20 years are necessary in order to detect a significant increased risk in colorectal cancer after gastric surgery, as indicated by several studies.<sup>(20,21)</sup> The current study could not confirm this assertion since it was conducted over a 14-year time period.

Normally, provincial migration patterns would also have been included as an endpoint for the PYAR calculation; however, due to the unavailability of the registrant file at the time of analysis, data regarding provincial migration were not included in the PYAR calculation. This may have over-inflated PYAR in some instances with a subsequent over-estimation of expected values, biasing the study's findings to lower values. However, a recent study using similar Manitoba datasets has shown that adding provincial migration endpoints into the analysis did not alter its conclusions.<sup>(260)</sup>

Finally, using the entire Manitoba population as the comparison group, as opposed to those who did not receive gastric surgery, may tend to shift results to lower risk estimates. However, the magnitude of this effect would be small as gastric surgery is a relatively rare occurrence in Manitoba with an approximate crude incidence of 22.0/100,000/year. For instance, if individuals who received a gastric surgery were removed from the denominator, the SIR would only increase by approximately 0.02% per year.

### **C. Conclusions and Recommendations**

The purpose of the current study was to investigate the association between gastric surgery and the risk of developing colorectal cancer, according to sex (combined as well as separately), tumour subsite, and type of gastric surgery. Using population-based data sources from Manitoba and a maximum follow-up of 14 years, this study found no increase in colorectal cancer risk following gastric surgery. Protective effects were observed for both sexes combined after one, five, and ten year induction periods were implemented; protective effects were also observed for the sexes separately at one and five year induction periods.

Although there was no evidence that, in general, a gastric surgery increases the risk of colorectal cancer, there may be a difference in risk for different types of surgery. For example, the SIRs calculated for gastrectomy at zero years of induction showed a statistically significant increased risk for males and females combined, as well as for males individually; they were not statistically significant for the “other” surgeries

category. After a one-year induction period was taken into account, the risk estimates for gastrectomy decreased and became non-significant; the risk estimates for all “other” surgeries became significantly low, indicating a protective effect. The fact that the majority of colorectal cancers were detected within a one-year time period for gastrectomy indicates that they may not have been the result of gastric surgery, but rather, the result of medical detection during the first post-operative year, a misdiagnosis for the condition requiring gastric surgery, or a gastric surgery occurring simultaneously with a colorectal cancer surgery, combined with a small delay in the reporting of the malignancy to the cancer registry.

Investigating risk by gastric surgery type and colorectal cancer subsite showed a statistically significant increased risk for proximal tumours for both sexes combined, after gastrectomy at zero years of induction. This risk became non-significant at subsequent induction periods, indicating that gastrectomy may not be responsible for tumour development, as one year is usually not an adequate period of time for colorectal carcinogenesis. There was no statistically significant increased risk for distal colorectal cancer after gastrectomy for any induction period. A statistically significant reduced risk of distal colorectal cancer was found overall and for males who underwent “other” gastric surgeries, after zero, one and five year induction periods were implemented. “Other” surgeries were not significantly associated with increased proximal colorectal cancer risk at any induction period.

This study does not support the theory that gastric surgery increases colorectal cancer risk via an altered bile acid metabolism or any other mechanism proposed to produce a carcinogenic environment in the colon. The study’s findings do not support

the case for routine endoscopic screening after gastric surgery; however, this study is somewhat limited by its small sample size and short follow-up.

It is recommended that future analysis use data back to 1970, the earliest date for which data is available. This would provide additional results based on a larger cohort with longer average follow-up (i.e., allow for a greater proportion of the cohort to have longer induction periods, which would provide adequate statistical power to detect statistically significant differences). Conversely, the study could be performed again in several years, which would also provide a longer latency period. Furthermore, provincial migration data should be used as an endpoint in the PYAR methodology in order to more completely reflect the expected values of colorectal cancer in the cohort.

Finally, it would be advantageous to create a comparison cohort, by using the registrant file from Manitoba Health, to adjust for possible confounding. Registrants without gastric surgery could be matched with each subject in the gastric surgery cohort. Matching could be based on the following criteria: year of coverage (i.e., the control must have been registered in the Manitoba Health Care Insurance Plan in the same year that the gastric surgery occurred), sex, age, residence (using the prefix of the postal code, known as the forward sortation area), and cholecystectomy status. This would make the comparison group more similar to the gastric surgery cohort than the general population, which would better assist in determining the role of gastric surgery in the development of colorectal cancer. This would minimize the influence of other potential risk factors, assuming that a common demographic profile is a suitable proxy for common exposure to other variables not directly measurable using administrative data, such as diet and smoking. This process has the additional advantage of minimizing any bias that could be

associated with record linkage, since the risk estimate numerator and denominator values would be collected in a similar manner (i.e., for both the gastric surgery cohort and the comparison group). In summary, this type of cohort study would partially control for environmental and socioeconomic confounders, data which are normally unavailable in administrative databases.

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## APPENDIX A. CANCER FILE PREPARATION

Figure 1A. Colorectal and Gastric Cancer File Preparation, Linked Cancer Registry, CancerCare Manitoba, 1984-1998

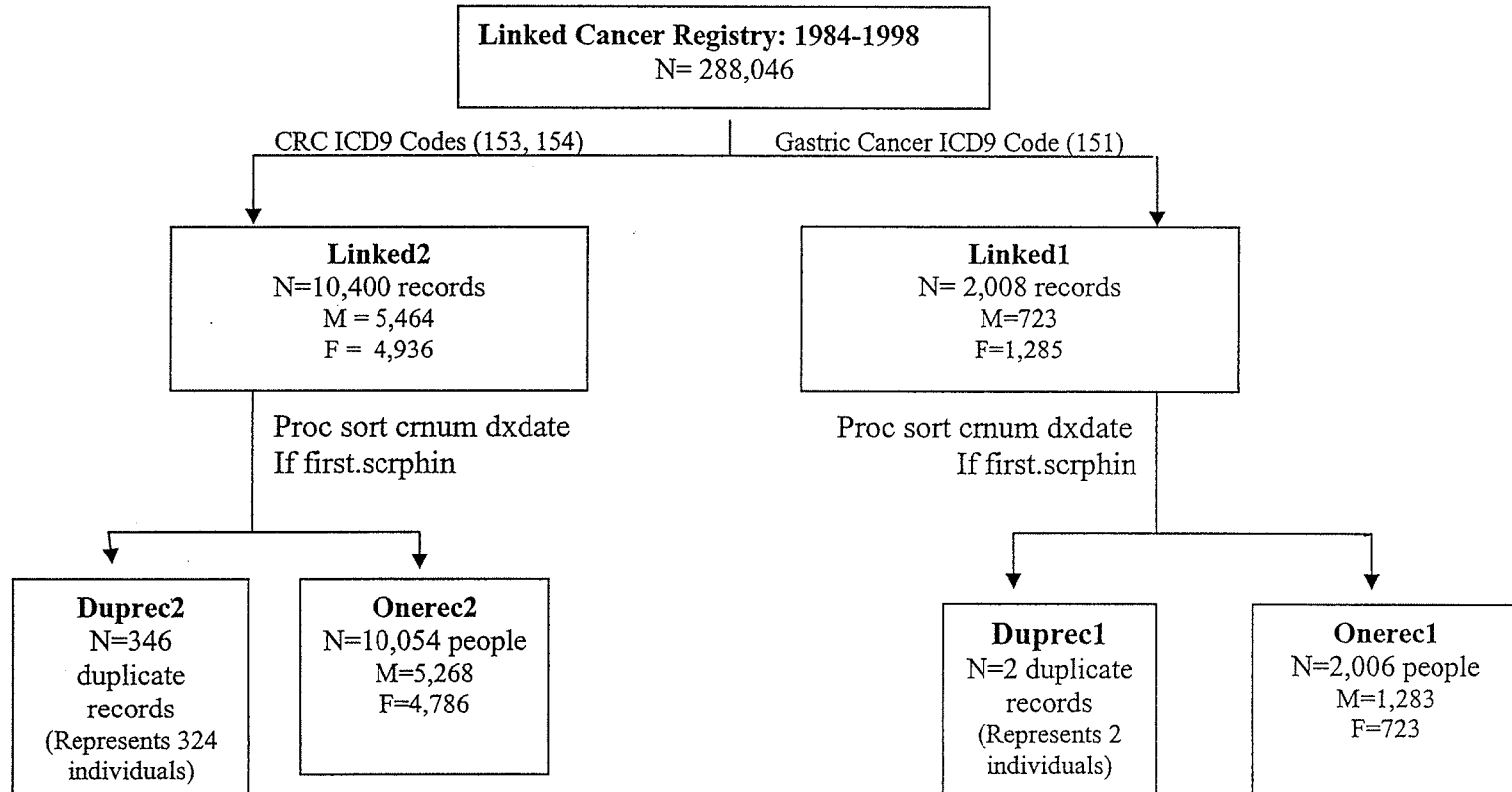
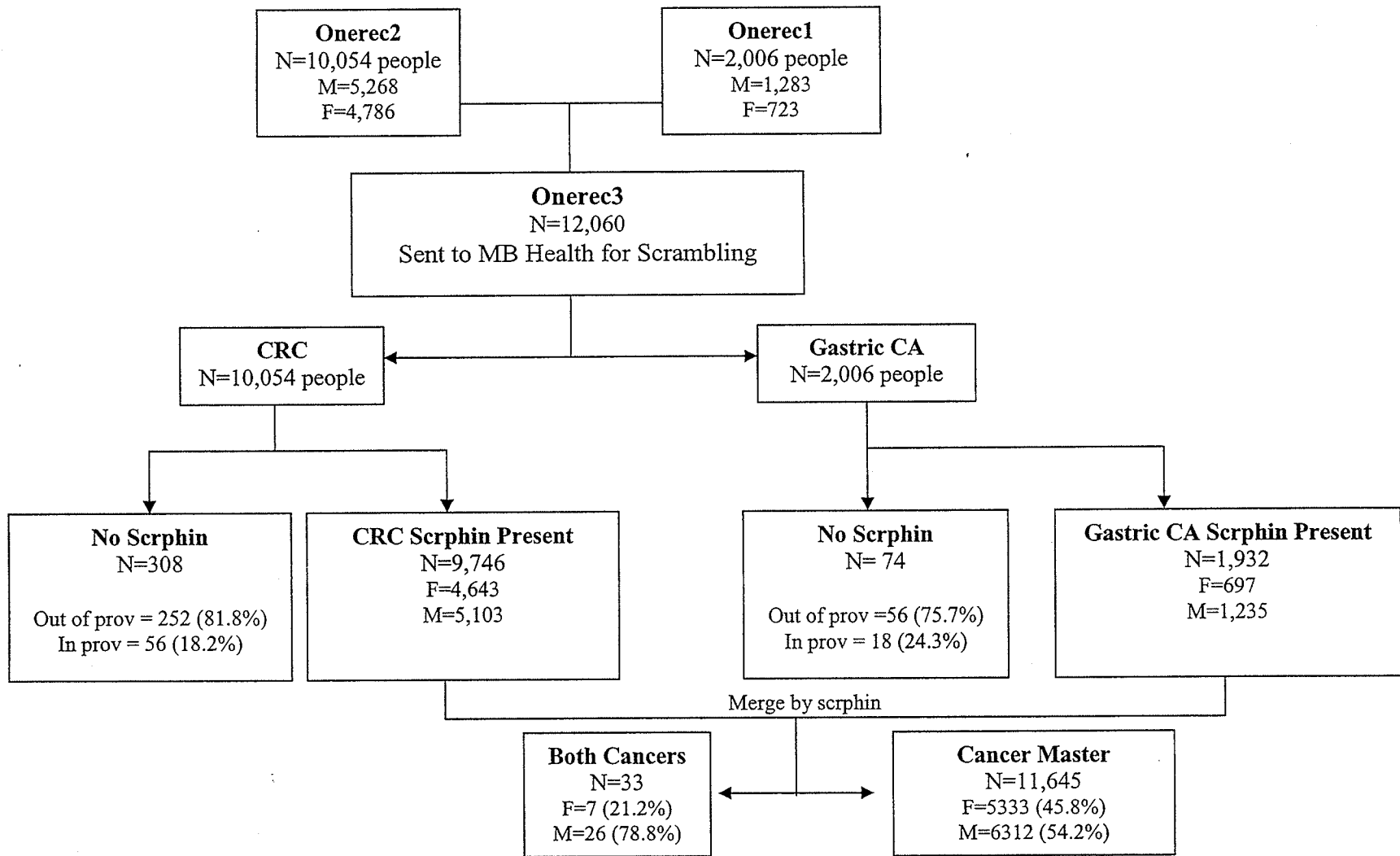


Figure 2A. Colorectal and Gastric Cancer File Preparation, Linked Cancer Registry, CancerCare Manitoba, 1984-1998



## APPENDIX B. TABLES PRESENTING COLORECTAL CANCER RATES, GENERAL POPULATION OF MANITOBA

Table 1B. Colorectal Cancer Rate Determination, General Population of Manitoba, Males and Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	1	3	15	23	85	155	180	112	22	0	596
MB Population Base	340285	203778	164050	109705	100903	92921	59809	23286	4217	132	1099086
CRC Rate	2.9E-06	1.5E-05	9.1E-05	2.1E-04	8.4E-04	1.7E-03	3.0E-03	4.8E-03	5.2E-03	0.0E+00	5.4E-04
1985											
# of CRC	0	0	11	34	80	185	220	116	13	2	661
MB Population Base	338598	204946	170659	112372	99918	93155	61749	24102	4273	160	1109932
CRC Rate	0.0E+00	0.0E+00	6.4E-05	3.0E-04	8.0E-04	2.0E-03	3.6E-03	4.8E-03	3.0E-03	1.3E-02	6.0E-04
1986											
# of CRC	0	1	6	32	89	160	217	94	19	0	618
MB Population Base	337355	204038	175238	115942	99127	93403	62840	24736	4347	162	1117188
CRC Rate	0.0E+00	4.9E-06	3.4E-05	2.8E-04	9.0E-04	1.7E-03	3.5E-03	3.8E-03	4.4E-03	0.0E+00	5.5E-04
1987											
# of CRC	1	2	3	23	58	171	210	110	23	0	601
MB Population Base	337479	200946	177924	121957	98371	93410	63992	25445	4421	155	1124100
CRC Rate	3.0E-06	1.0E-05	1.7E-05	1.9E-04	5.9E-04	1.8E-03	3.3E-03	4.3E-03	5.2E-03	0.0E+00	5.3E-04
1988											
# of CRC	0	0	8	23	71	174	195	128	26	0	625
MB Population Base	336535	197017	180106	127451	97713	93676	64497	26278	4485	152	1127910
CRC Rate	0.0E+00	0.0E+00	4.4E-05	1.8E-04	7.3E-04	1.9E-03	3.0E-03	4.9E-03	5.8E-03	0.0E+00	5.5E-04
1989											
# of CRC	0	5	10	28	81	189	201	122	24	0	660
MB Population Base	335319	192728	182624	132133	97590	93653	65364	27051	4562	151	1131175
CRC Rate	0.0E+00	2.6E-05	5.5E-05	2.1E-04	8.3E-04	2.0E-03	3.1E-03	4.5E-03	5.3E-03	0.0E+00	5.8E-04
1990											
# of CRC	0	2	3	32	68	156	195	127	21	1	605
MB Population Base	333934	187354	185090	136862	97031	93081	66625	27994	4701	175	1132847
CRC Rate	0.0E+00	1.1E-05	1.6E-05	2.3E-04	7.0E-04	1.7E-03	2.9E-03	4.5E-03	4.5E-03	5.7E-03	5.3E-04
1991											
# of CRC	0	3	13	33	82	173	202	126	21	1	654
MB Population Base	332264	181840	187597	141140	97663	92126	67877	28944	4920	195	1134566
CRC Rate	0.0E+00	1.6E-05	6.9E-05	2.3E-04	8.4E-04	1.9E-03	3.0E-03	4.4E-03	4.3E-03	5.1E-03	5.8E-04
1992											
# of CRC	0	3	9	35	81	183	201	134	19	0	665
MB Population Base	330546	175720	189059	145486	98191	91250	69160	29970	5108	192	1134682
CRC Rate	0.0E+00	1.7E-05	4.8E-05	2.4E-04	8.2E-04	2.0E-03	2.9E-03	4.5E-03	3.7E-03	0.0E+00	5.9E-04
1993											
# of CRC	1	2	6	40	72	168	215	134	31	0	669
MB Population Base	329795	170343	190517	149523	99894	90289	70160	31112	5227	204	1137064
CRC Rate	3.0E-06	1.2E-05	3.1E-05	2.7E-04	7.2E-04	1.9E-03	3.1E-03	4.3E-03	5.9E-03	0.0E+00	5.9E-04
1994											
# of CRC	0	5	7	26	69	139	240	126	20	0	632
MB Population Base	329341	165358	190485	154362	102275	89149	70632	32356	5464	194	1139616
CRC Rate	0.0E+00	3.0E-05	3.7E-05	1.7E-04	6.7E-04	1.6E-03	3.4E-03	3.9E-03	3.7E-03	0.0E+00	5.5E-04
1995											
# of CRC	0	0	10	22	78	144	227	148	22	0	651
MB Population Base	329185	161525	189697	159460	104439	88030	71045	33508	5679	206	1142774
CRC Rate	0.0E+00	0.0E+00	5.3E-05	1.4E-04	7.5E-04	1.6E-03	3.2E-03	4.4E-03	3.9E-03	0.0E+00	5.7E-04
1996											
# of CRC	0	3	12	43	72	166	220	114	19	0	649
MB Population Base	328504	158648	187810	163859	107486	87289	71510	34172	5874	217	1145369
CRC Rate	0.0E+00	1.9E-05	6.4E-05	2.6E-04	6.7E-04	1.9E-03	3.1E-03	3.3E-03	3.2E-03	0.0E+00	5.7E-04
1997											
# of CRC	0	0	12	39	91	165	228	150	26	1	712
MB Population Base	327396	156846	183999	166215	112935	86536	71777	34889	5892	211	1146696
CRC Rate	0.0E+00	0.0E+00	6.5E-05	2.3E-04	8.1E-04	1.9E-03	3.2E-03	4.3E-03	4.4E-03	4.7E-03	6.2E-04
1998											
# of CRC	0	2	10	42	96	173	258	138	28	1	748
MB Population Base	324574	154739	179304	168176	117779	86167	72107	35261	6154	198	1144459
CRC Rate	0.0E+00	1.3E-05	5.6E-05	2.5E-04	8.2E-04	2.0E-03	3.6E-03	3.9E-03	4.5E-03	5.1E-03	6.5E-04
1984-1998											
Total # CRC	3	31	135	475	1173	2501	3209	1879	334	6	9746
Total MB Population Base	4991110	2715826	2734159	2104643	1531315	1364135	1009144	439104	75324	2704	16967464
Total CRC Rate	6.0E-07	1.1E-05	4.9E-05	2.3E-04	7.7E-04	1.8E-03	3.2E-03	4.3E-03	4.4E-03	2.2E-03	5.7E-04

Table 2B. Colorectal Cancer Rate Determination, General Population of Manitoba, Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	1	2	6	11	44	61	85	63	15	0	288
MB Population Base	166193	100875	81439	54430	51141	49684	33569	14433	2892	87	554743
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
1985											
# of CRC	0	0	6	19	33	78	113	67	10	0	326
MB Population Base	165269	101243	84753	55613	50401	49890	34751	15036	2990	115	560061
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
1986											
# of CRC	0	1	3	10	42	76	99	50	11	0	292
MB Population Base	164669	100700	86804	57364	49932	50038	35438	15475	3066	123	563609
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
1987											
# of CRC	1	0	2	9	24	76	105	66	16	0	299
MB Population Base	164411	99137	88051	60349	49389	50042	36135	16009	3143	111	566777
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
1988											
# of CRC	0	0	3	12	29	78	112	76	17	0	327
MB Population Base	164056	97152	89062	63192	48967	50139	36503	16545	3260	107	568983
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
1989											
# of CRC	0	3	4	19	34	82	90	64	16	0	312
MB Population Base	163352	95082	90332	65547	48833	50149	36991	17134	3323	112	570855
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
1990											
# of CRC	0	0	3	8	33	72	82	62	13	1	274
MB Population Base	162637	92534	91627	67855	48511	49689	37829	17717	3434	130	571963
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
1991											
# of CRC	0	2	9	15	47	71	91	66	12	1	314
MB Population Base	161808	90035	92687	70090	48836	48958	38740	18267	3611	156	573188
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
1992											
# of CRC	0	0	5	17	37	81	103	72	10	0	325
MB Population Base	161031	86982	93617	72245	49187	48131	39628	19001	3706	147	573675
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
1993											
# of CRC	1	0	4	22	29	63	103	70	20	0	312
MB Population Base	160714	84098	94323	74459	50140	47397	40289	19752	3793	163	575128
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
1994											
# of CRC	0	3	3	11	27	51	110	64	15	0	284
MB Population Base	160576	81701	94363	77052	51309	46544	40583	20592	3956	157	576833
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
1995											
# of CRC	0	0	3	9	34	56	112	84	14	0	312
MB Population Base	160587	79879	94077	79916	52280	45698	40798	21298	4138	160	578831
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
1996											
# of CRC	0	1	3	20	30	64	109	68	12	0	307
MB Population Base	160240	78451	93291	81905	53843	45162	41039	21686	4317	169	580103
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
1997											
# of CRC	0	0	3	12	43	71	104	90	19	1	343
MB Population Base	159544	77574	91542	82979	56523	44636	41106	22134	4329	164	580531
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
1998											
# of CRC	0	1	3	22	36	53	128	67	17	1	328
MB Population Base	158108	76544	89133	83993	58921	44386	41122	22491	4507	157	579362
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
1984-1998											
Total # CRC	3	13	60	216	522	1033	1546	1029	217	4	4643
Total MB Population Base	2433195	1341987	1355101	1046989	768213	720543	574521	277570	54465	2058	8574642
Total CRC Rate	1.2E-06	9.7E-06	4.4E-05	2.1E-04	6.8E-04	1.4E-03	2.7E-03	3.7E-03	4.0E-03	1.9E-03	5.4E-04

Table 3B. Colorectal Cancer Rate Determination, General Population of Manitoba, Males, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	0	1	9	12	41	94	95	49	7	0	308
MB Population Base	174092	102903	82611	55275	49762	43237	26240	8853	1325	45	544343
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
1985											
# of CRC	0	0	5	15	47	107	107	49	3	2	335
MB Population Base	173329	103703	85906	56759	49517	43265	26998	9066	1283	45	549871
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
1986											
# of CRC	0	0	3	22	47	84	118	44	8	0	326
MB Population Base	172686	103338	88434	58578	49195	43365	27402	9261	1281	39	553579
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	5.9E-04
1987											
# of CRC	0	2	1	14	34	95	105	44	7	0	302
MB Population Base	173068	101809	89873	61608	48982	43368	27857	9436	1278	44	557324
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
1988											
# of CRC	0	0	5	11	42	96	83	52	9	0	298
MB Population Base	172479	99865	91044	64259	48746	43537	27994	9733	1225	45	558927
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
1989											
# of CRC	0	2	6	9	47	107	111	58	8	0	348
MB Population Base	171967	97646	92292	66586	48757	43504	28373	9917	1239	39	560320
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
1990											
# of CRC	0	2	0	24	35	84	113	65	8	0	331
MB Population Base	171297	94820	93463	69007	48520	43392	28796	10277	1267	45	560885
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
1991											
# of CRC	0	1	4	18	35	102	111	60	9	0	340
MB Population Base	170456	91805	94910	71050	48827	43168	29137	10677	1309	39	561378
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
1992											
# of CRC	0	3	4	18	44	102	98	62	9	0	340
MB Population Base	169515	88738	95442	73241	49004	43119	29532	10969	1402	45	561007
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
1993											
# of CRC	0	2	2	18	43	105	112	64	11	0	357
MB Population Base	169081	86245	96194	75064	49754	42892	29871	11360	1434	41	561936
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
1994											
# of CRC	0	2	4	15	42	88	130	62	5	0	348
MB Population Base	168765	83657	96122	77310	50966	42605	30049	11764	1508	37	562784
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
1995											
# of CRC	0	0	7	13	44	88	115	64	8	0	339
MB Population Base	168598	81646	95620	79544	52159	42332	30247	12210	1541	46	563943
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
1996											
# of CRC	0	2	9	23	42	102	111	46	7	0	342
MB Population Base	168264	80197	94519	81954	53643	42127	30471	12486	1557	48	565266
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
1997											
# of CRC	0	0	9	27	48	94	124	60	7	0	369
MB Population Base	167852	79272	92457	83236	56412	41900	30671	12755	1563	47	566165
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
1998											
# of CRC	0	1	7	20	60	120	130	71	11	0	420
MB Population Base	166466	78195	90171	84183	58858	41781	30985	12770	1647	41	565097
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
1984-1998											
Total # CRC	0	18	75	259	651	1468	1663	850	117	2	5103
Total MB Population Base	2557915	1373839	1379058	1057654	763102	643592	434623	161534	20859	646	8392825
Total CRC Rate	0.0E+00	1.3E-05	5.4E-05	2.4E-04	8.5E-04	2.3E-03	3.8E-03	5.3E-03	5.6E-03	3.1E-03	6.1E-04

Table 4B. Proximal Colorectal Cancer Rate Determination, General Population of Manitoba, Males and Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	0	0	7	9	23	43	54	42	14	0	192
MB Population Base	340285	203778	164050	109705	100903	92921	59809	23286	4217	132	1099086
CRC Rate	0.0E+00	0.0E+00	4.3E-05	8.2E-05	2.3E-04	4.6E-04	9.0E-04	1.8E-03	3.3E-03	0.0E+00	1.7E-04
1985											
# of CRC	0	0	3	9	12	48	69	40	4	1	186
MB Population Base	338598	204946	170659	112372	99918	93155	61749	24102	4273	160	1109932
CRC Rate	0.0E+00	0.0E+00	1.8E-05	8.0E-05	1.2E-04	5.2E-04	1.1E-03	1.7E-03	9.4E-04	6.3E-03	1.7E-04
1986											
# of CRC	0	0	0	8	27	47	74	30	7	0	193
MB Population Base	337355	204038	175238	115942	99127	93403	62840	24736	4347	162	1117188
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.9E-05	2.7E-04	5.0E-04	1.2E-03	1.2E-03	1.6E-03	0.0E+00	1.7E-04
1987											
# of CRC	0	0	1	7	19	48	71	46	12	0	204
MB Population Base	337479	200946	177924	121957	98371	93410	63992	25445	4421	155	1124100
CRC Rate	0.0E+00	0.0E+00	5.6E-06	5.7E-05	1.9E-04	5.1E-04	1.1E-03	1.8E-03	2.7E-03	0.0E+00	1.8E-04
1988											
# of CRC	0	0	3	5	20	55	60	54	10	0	207
MB Population Base	336535	197017	180106	127451	97713	93676	64497	26278	4485	152	1127910
CRC Rate	0.0E+00	0.0E+00	1.7E-05	3.9E-05	2.0E-04	5.9E-04	9.3E-04	2.1E-03	2.2E-03	0.0E+00	1.8E-04
1989											
# of CRC	0	3	3	7	25	56	75	49	11	0	229
MB Population Base	335319	192728	182624	132133	97590	93653	65364	27051	4562	151	1131175
CRC Rate	0.0E+00	1.6E-05	1.6E-05	5.3E-05	2.6E-04	6.0E-04	1.1E-03	1.8E-03	2.4E-03	0.0E+00	2.0E-04
1990											
# of CRC	0	1	1	10	29	45	70	53	5	0	214
MB Population Base	333934	187354	185090	136862	97031	93081	66625	27994	4701	175	1132847
CRC Rate	0.0E+00	5.3E-06	5.4E-06	7.3E-05	3.0E-04	4.8E-04	1.1E-03	1.9E-03	1.1E-03	0.0E+00	1.9E-04
1991											
# of CRC	0	1	3	9	23	43	72	55	9	0	215
MB Population Base	332264	181840	187597	141140	97663	92126	67877	28944	4920	195	1134566
CRC Rate	0.0E+00	5.5E-06	1.6E-05	6.4E-05	2.4E-04	4.7E-04	1.1E-03	1.9E-03	1.8E-03	0.0E+00	1.9E-04
1992											
# of CRC	0	1	4	11	23	52	70	62	3	0	226
MB Population Base	330546	175720	189059	145486	98191	91250	69160	29970	5108	192	1134682
CRC Rate	0.0E+00	5.7E-06	2.1E-05	7.6E-05	2.3E-04	5.7E-04	1.0E-03	2.1E-03	5.9E-04	0.0E+00	2.0E-04
1993											
# of CRC	1	0	1	7	18	50	73	57	9	0	216
MB Population Base	329795	170343	190517	149523	99894	90289	70160	31112	5227	204	1137064
CRC Rate	3.0E-06	0.0E+00	5.2E-06	4.7E-05	1.8E-04	5.5E-04	1.0E-03	1.8E-03	1.7E-03	0.0E+00	1.9E-04
1994											
# of CRC	0	2	3	9	21	37	86	48	7	0	213
MB Population Base	329341	165358	190485	154362	102275	89149	70632	32356	5464	194	1139616
CRC Rate	0.0E+00	1.2E-05	1.6E-05	5.8E-05	2.1E-04	4.2E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	1.9E-04
1995											
# of CRC	0	0	5	4	21	45	92	54	8	0	229
MB Population Base	329185	161525	189697	159460	104439	88030	71045	33508	5679	206	1142774
CRC Rate	0.0E+00	0.0E+00	2.6E-05	2.5E-05	2.0E-04	5.1E-04	1.3E-03	1.6E-03	1.4E-03	0.0E+00	2.0E-04
1996											
# of CRC	0	0	5	14	18	56	79	49	10	0	231
MB Population Base	328504	158648	187810	163859	107486	87289	71510	34172	5874	217	1145369
CRC Rate	0.0E+00	0.0E+00	2.7E-05	8.5E-05	1.7E-04	6.4E-04	1.1E-03	1.4E-03	1.7E-03	0.0E+00	2.0E-04
1997											
# of CRC	0	0	4	10	30	52	77	53	9	1	236
MB Population Base	327396	156846	183999	166215	112935	86536	71777	34889	5892	211	1146696
CRC Rate	0.0E+00	0.0E+00	2.2E-05	6.0E-05	2.7E-04	6.0E-04	1.1E-03	1.5E-03	1.5E-03	4.7E-03	2.1E-04
1998											
# of CRC	0	0	3	9	24	51	109	65	10	0	271
MB Population Base	324574	154739	179304	168176	117779	86167	72107	35261	6154	198	1144459
CRC Rate	0.0E+00	0.0E+00	1.7E-05	5.4E-05	2.0E-04	5.9E-04	1.5E-03	1.8E-03	1.6E-03	0.0E+00	2.4E-04
1984-1998											
Total # CRC	1	8	46	128	333	728	1131	757	128	2	3262
Total MB Population Base	4991110	2715826	2734159	2104643	1531315	1364135	1009144	439104	75324	2704	16967464
Total CRC Rate	2.0E-07	2.9E-06	1.7E-05	6.1E-05	2.2E-04	5.3E-04	1.1E-03	1.7E-03	1.7E-03	7.4E-04	1.9E-04

Table 5B. Proximal Colorectal Cancer Rate Determination, General Population of Manitoba, Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	0	0	5	2	17	19	28	26	11	0	108
MB Population Base	166193	100875	81439	54430	51141	49684	33569	14433	2892	87	554743
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
1985											
# of CRC	0	0	2	4	6	24	41	25	4	0	106
MB Population Base	165269	101243	84753	55613	50401	49890	34751	15036	2990	115	560061
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
1986											
# of CRC	0	0	0	3	14	25	35	19	3	0	99
MB Population Base	164669	100700	86804	57364	49932	50038	35438	15475	3066	123	563609
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
1987											
# of CRC	0	0	1	3	9	27	40	27	9	0	116
MB Population Base	164411	99137	88051	60349	49389	50042	36135	16009	3143	111	566777
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
1988											
# of CRC	0	0	1	3	10	30	32	34	7	0	117
MB Population Base	164056	97152	89062	63192	48967	50139	36503	16545	3260	107	568983
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
1989											
# of CRC	0	2	2	5	10	26	43	26	8	0	122
MB Population Base	163352	95082	90332	65547	48833	50149	36991	17134	3323	112	570855
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
1990											
# of CRC	0	0	1	2	14	21	32	26	4	0	100
MB Population Base	162637	92534	91627	67855	48511	49689	37829	17717	3434	130	571963
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
1991											
# of CRC	0	0	2	4	15	22	41	33	7	0	124
MB Population Base	161808	90035	92687	70090	48836	48958	38740	18267	3611	156	573188
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
1992											
# of CRC	0	0	1	5	14	27	41	37	2	0	127
MB Population Base	161031	86982	93617	72245	49187	48131	39628	19001	3706	147	573675
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
1993											
# of CRC	1	0	1	2	11	22	41	35	6	0	119
MB Population Base	160714	84098	94323	74459	50140	47397	40289	19752	3793	163	575128
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
1994											
# of CRC	0	1	1	4	9	20	45	25	5	0	110
MB Population Base	160576	81701	94363	77052	51309	46544	40583	20592	3956	157	576833
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
1995											
# of CRC	0	0	0	1	9	20	46	32	5	0	113
MB Population Base	160587	79879	94077	79916	52280	45698	40798	21298	4138	160	578831
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
1996											
# of CRC	0	0	2	8	8	22	51	31	7	0	129
MB Population Base	160240	78451	93291	81905	53843	45162	41039	21686	4317	169	580103
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
1997											
# of CRC	0	0	1	3	18	25	44	42	5	1	139
MB Population Base	159544	77574	91542	82979	56523	44636	41106	22134	4329	164	580531
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
1998											
# of CRC	0	0	0	6	11	20	63	36	9	0	145
MB Population Base	158108	76544	89133	83993	58921	44386	41122	22491	4507	157	579362
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
1984-1998											
Total # CRC	1	3	20	55	175	350	623	454	92	1	1774
Total MB Population Base	2433195	1341987	1355101	1046989	768213	720543	574521	277570	54465	2058	8574642
Total CRC Rate	4.1E-07	2.2E-06	1.5E-05	5.3E-05	2.3E-04	4.9E-04	1.1E-03	1.6E-03	1.7E-03	4.9E-04	2.1E-04

Table 6B. Proximal Colorectal Cancer Rate Determination, General Population of Manitoba, Males, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	0	0	2	7	6	24	26	16	3	0	84
MB Population Base	174092	102903	82611	55275	49762	43237	26240	8853	1325	45	544343
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
1985											
# of CRC	0	0	1	5	6	24	28	15	0	1	80
MB Population Base	173329	103703	85906	56759	49517	43265	26998	9066	1283	45	549871
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
1986											
# of CRC	0	0	0	5	13	22	39	11	4	0	94
MB Population Base	172686	103338	88434	58578	49195	43365	27402	9261	1281	39	553579
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
1987											
# of CRC	0	0	0	4	10	21	31	19	3	0	88
MB Population Base	173068	101809	89873	61608	48982	43368	27857	9436	1278	44	557324
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
1988											
# of CRC	0	0	2	2	10	25	28	20	3	0	90
MB Population Base	172479	99865	91044	64259	48746	43537	27994	9733	1225	45	558927
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
1989											
# of CRC	0	1	1	2	15	30	32	23	3	0	107
MB Population Base	171967	97646	92292	66586	48757	43504	28373	9917	1239	39	560320
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
1990											
# of CRC	0	1	0	8	15	24	38	27	1	0	114
MB Population Base	171297	94820	93463	69007	48520	43392	28796	10277	1267	45	560885
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
1991											
# of CRC	0	1	1	5	8	21	31	22	2	0	91
MB Population Base	170456	91805	94910	71050	48827	43168	29137	10677	1309	39	561378
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
1992											
# of CRC	0	1	3	6	9	25	29	25	1	0	99
MB Population Base	169515	88738	95442	73241	49004	43119	29532	10969	1402	45	561007
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
1993											
# of CRC	0	0	0	5	7	28	32	22	3	0	97
MB Population Base	169081	86245	96194	75064	49754	42892	29871	11360	1434	41	561936
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
1994											
# of CRC	0	1	2	5	12	17	41	23	2	0	103
MB Population Base	168765	83657	96122	77310	50966	42605	30049	11764	1508	37	562784
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
1995											
# of CRC	0	0	5	3	12	25	46	22	3	0	116
MB Population Base	168598	81646	95620	79544	52159	42332	30247	12210	1541	46	563943
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
1996											
# of CRC	0	0	3	6	10	34	28	18	3	0	102
MB Population Base	168264	80197	94519	81954	53643	42127	30471	12486	1557	48	565266
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
1997											
# of CRC	0	0	3	7	12	27	33	11	4	0	97
MB Population Base	167852	79272	92457	83236	56412	41900	30671	12755	1563	47	566165
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
1998											
# of CRC	0	0	3	3	13	31	46	29	1	0	126
MB Population Base	166466	78195	90171	84183	58858	41781	30985	12770	1647	41	565097
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
1984-1998											
Total # CRC	0	5	26	73	158	378	508	303	36	1	1488
Total MB Population Base	2557915	1373839	1379058	1057654	763102	643592	434623	161534	20859	646	8392825
Total CRC Rate	0.0E+00	3.6E-06	1.9E-05	6.9E-05	2.1E-04	5.9E-04	1.2E-03	1.9E-03	1.7E-03	1.5E-03	1.8E-04



Table 7B. Distal Colorectal Cancer Rate Determination, General Population of Manitoba, Males and Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	1	3	5	12	51	93	105	57	7	0	334
MB Population Base	340285	203778	164050	109705	100903	92921	59809	23286	4217	132	1099086
CRC Rate	2.9E-06	1.5E-05	3.0E-05	1.1E-04	5.1E-04	1.0E-03	1.8E-03	2.4E-03	1.7E-03	0.0E+00	3.0E-04
1985											
# of CRC	0	0	6	18	61	121	129	65	8	1	409
MB Population Base	338598	204946	170659	112372	99918	93155	61749	24102	4273	160	1109932
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.6E-04	6.1E-04	1.3E-03	2.1E-03	2.7E-03	1.9E-03	6.3E-03	3.7E-04
1986											
# of CRC	0	1	4	21	52	94	115	51	10	0	348
MB Population Base	337355	204038	175238	115942	99127	93403	62840	24736	4347	162	1117188
CRC Rate	0.0E+00	4.9E-06	2.3E-05	1.8E-04	5.2E-04	1.0E-03	1.8E-03	2.1E-03	2.3E-03	0.0E+00	3.1E-04
1987											
# of CRC	0	2	2	15	34	102	114	48	6	0	323
MB Population Base	337479	200946	177924	121957	98371	93410	63992	25445	4421	155	1124100
CRC Rate	0.0E+00	1.0E-05	1.1E-05	1.2E-04	3.5E-04	1.1E-03	1.8E-03	1.9E-03	1.4E-03	0.0E+00	2.9E-04
1988											
# of CRC	0	0	5	14	43	99	112	58	12	0	343
MB Population Base	336535	197017	180106	127451	97713	93676	64497	26278	4485	152	1127910
CRC Rate	0.0E+00	0.0E+00	2.8E-05	1.1E-04	4.4E-04	1.1E-03	1.7E-03	2.2E-03	2.7E-03	0.0E+00	3.0E-04
1989											
# of CRC	0	2	7	20	54	122	114	63	9	0	391
MB Population Base	335319	192728	182624	132133	97590	93653	65364	27051	4562	151	1131175
CRC Rate	0.0E+00	1.0E-05	3.8E-05	1.5E-04	5.5E-04	1.3E-03	1.7E-03	2.3E-03	2.0E-03	0.0E+00	3.5E-04
1990											
# of CRC	0	1	2	20	36	99	113	58	12	1	342
MB Population Base	333934	187354	185090	136862	97031	93081	66625	27994	4701	175	1132847
CRC Rate	0.0E+00	5.3E-06	1.1E-05	1.5E-04	3.7E-04	1.1E-03	1.7E-03	2.1E-03	2.6E-03	5.7E-03	3.0E-04
1991											
# of CRC	0	2	7	22	53	116	117	57	11	1	386
MB Population Base	332264	181840	187597	141140	97663	92126	67877	28944	4920	195	1134566
CRC Rate	0.0E+00	1.1E-05	3.7E-05	1.6E-04	5.4E-04	1.3E-03	1.7E-03	2.0E-03	2.2E-03	5.1E-03	3.4E-04
1992											
# of CRC	0	2	5	21	51	110	107	62	11	0	369
MB Population Base	330546	175720	189059	145486	98191	91250	69160	29970	5108	192	1134682
CRC Rate	0.0E+00	1.1E-05	2.6E-05	1.4E-04	5.2E-04	1.2E-03	1.5E-03	2.1E-03	2.2E-03	0.0E+00	3.3E-04
1993											
# of CRC	0	2	5	31	47	104	120	55	16	0	380
MB Population Base	329795	170343	190517	149523	99894	90289	70160	31112	5227	204	1137064
CRC Rate	0.0E+00	1.2E-05	2.6E-05	2.1E-04	4.7E-04	1.2E-03	1.7E-03	1.8E-03	3.1E-03	0.0E+00	3.3E-04
1994											
# of CRC	0	3	3	17	42	90	131	64	7	0	357
MB Population Base	329341	165358	190485	154362	102275	89149	70632	32356	5464	194	1139616
CRC Rate	0.0E+00	1.8E-05	1.6E-05	1.1E-04	4.1E-04	1.0E-03	1.9E-03	2.0E-03	1.3E-03	0.0E+00	3.1E-04
1995											
# of CRC	0	0	5	16	53	90	117	79	10	0	370
MB Population Base	329185	161525	189697	159460	104439	88030	71045	33508	5679	206	1142774
CRC Rate	0.0E+00	0.0E+00	2.6E-05	1.0E-04	5.1E-04	1.0E-03	1.6E-03	2.4E-03	1.8E-03	0.0E+00	3.2E-04
1996											
# of CRC	0	1	7	27	51	103	130	47	7	0	373
MB Population Base	328504	158648	187810	163859	107486	87289	71510	34172	5874	217	1145369
CRC Rate	0.0E+00	6.3E-06	3.7E-05	1.6E-04	4.7E-04	1.2E-03	1.8E-03	1.4E-03	1.2E-03	0.0E+00	3.3E-04
1997											
# of CRC	0	0	7	29	59	103	137	73	8	0	416
MB Population Base	327396	156846	183999	166215	112935	86536	71777	34889	5892	211	1146696
CRC Rate	0.0E+00	0.0E+00	3.8E-05	1.7E-04	5.2E-04	1.2E-03	1.9E-03	2.1E-03	1.4E-03	0.0E+00	3.6E-04
1998											
# of CRC	0	2	6	29	69	115	132	67	13	0	433
MB Population Base	324574	154739	179304	168176	117779	86167	72107	35261	6154	198	1144459
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.7E-04	5.9E-04	1.3E-03	1.8E-03	1.9E-03	2.1E-03	0.0E+00	3.8E-04
1984-1998											
Total # CRC	1	21	76	312	756	1561	1793	904	147	3	5574
Total MB Population Base	4991110	2715826	2734159	2104643	1531315	1364135	1009144	439104	75324	2704	16967464
Total CRC Rate	2.0E-07	7.7E-06	2.8E-05	1.5E-04	4.9E-04	1.1E-03	1.8E-03	2.1E-03	2.0E-03	1.1E-03	3.3E-04

Table 8B. Distal Colorectal Cancer Rate Determination, General Population of Manitoba, Females, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	1	2	1	9	20	33	45	32	3	0	146
MB Population Base	166193	100875	81439	54430	51141	49684	33569	14433	2892	87	554743
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
1985											
# of CRC	0	0	3	10	24	45	59	36	6	0	183
MB Population Base	165269	101243	84753	55613	50401	49890	34751	15036	2990	115	560061
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
1986											
# of CRC	0	1	2	7	22	44	47	24	6	0	153
MB Population Base	164669	100700	86804	57364	49932	50038	35438	15475	3066	123	563609
CRC Rate	0.0E+00	9.9E-06	2.3E-05	1.2E-04	4.4E-04	8.8E-04	1.3E-03	1.6E-03	2.0E-03	0.0E+00	2.7E-04
1987											
# of CRC	0	0	1	5	13	41	50	28	3	0	141
MB Population Base	164411	99137	88051	60349	49389	50042	36135	16009	3143	111	566777
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
1988											
# of CRC	0	0	2	8	18	35	67	27	8	0	165
MB Population Base	164056	97152	89062	63192	48967	50139	36503	16545	3260	107	568983
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
1989											
# of CRC	0	1	2	13	23	49	43	32	5	0	168
MB Population Base	163352	95082	90332	65547	48833	50149	36991	17134	3323	112	570855
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
1990											
# of CRC	0	0	2	6	18	44	43	26	6	1	146
MB Population Base	162637	92534	91627	67855	48511	49689	37829	17717	3434	130	571963
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
1991											
# of CRC	0	2	5	9	28	41	46	26	4	1	162
MB Population Base	161808	90035	92687	70090	48836	48958	38740	18267	3611	156	573188
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
1992											
# of CRC	0	0	4	10	19	44	48	28	5	0	158
MB Population Base	161031	86982	93617	72245	49187	48131	39628	19001	3706	147	573675
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
1993											
# of CRC	0	0	3	19	15	38	46	23	9	0	153
MB Population Base	160714	84098	94323	74459	50140	47397	40289	19752	3793	163	575128
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
1994											
# of CRC	0	2	2	7	15	28	55	29	5	0	143
MB Population Base	160576	81701	94363	77052	51309	46544	40583	20592	3956	157	576833
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
1995											
# of CRC	0	0	3	8	23	33	57	41	5	0	170
MB Population Base	160587	79879	94077	79916	52280	45698	40798	21298	4138	160	578831
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
1996											
# of CRC	0	0	1	11	21	41	53	26	3	0	156
MB Population Base	160240	78451	93291	81905	53843	45162	41039	21686	4317	169	580103
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
1997											
# of CRC	0	0	2	9	24	42	55	35	7	0	174
MB Population Base	159544	77574	91542	82979	56523	44636	41106	22134	4329	164	580531
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
1998											
# of CRC	0	1	3	14	24	30	56	28	4	0	160
MB Population Base	158108	76544	89133	83993	58921	44386	41122	22491	4507	157	579362
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
1984-1998											
Total # CRC	1	9	36	145	307	588	770	441	79	2	2378
Total MB Population Base	2433195	1341987	1355101	1046989	768213	720543	574521	277570	54465	2058	8574642
Total CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04

Table 9B. Distal Colorectal Cancer Rate Determination, General Population of Manitoba, Males, 1984-1998

	Age at Diagnosis										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
# of CRC	0	1	4	3	31	60	60	25	4	0	188
MB Population Base	174092	102903	82611	55275	49762	43237	26240	8853	1325	45	544343
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
1985											
# of CRC	0	0	3	8	37	76	70	29	2	1	226
MB Population Base	173329	103703	85906	56759	49517	43265	26998	9066	1283	45	549871
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
1986											
# of CRC	0	0	2	14	30	50	68	27	4	0	195
MB Population Base	172686	103338	88434	58578	49195	43365	27402	9261	1281	39	553579
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
1987											
# of CRC	0	2	1	10	21	61	64	20	3	0	182
MB Population Base	173068	101809	89873	61608	48982	43368	27857	9436	1278	44	557324
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
1988											
# of CRC	0	0	3	6	25	64	45	31	4	0	178
MB Population Base	172479	99865	91044	64259	48746	43537	27994	9733	1225	45	558927
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
1989											
# of CRC	0	1	5	7	31	73	71	31	4	0	223
MB Population Base	171967	97646	92292	66586	48757	43504	28373	9917	1239	39	560320
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
1990											
# of CRC	0	1	0	14	18	55	70	32	6	0	196
MB Population Base	171297	94820	93463	69007	48520	43392	28796	10277	1267	45	560885
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
1991											
# of CRC	0	0	2	13	25	75	71	31	7	0	224
MB Population Base	170456	91805	94910	71050	48827	43168	29137	10677	1309	39	561378
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
1992											
# of CRC	0	2	1	11	32	66	59	34	6	0	211
MB Population Base	169515	88738	95442	73241	49004	43119	29532	10969	1402	45	561007
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
1993											
# of CRC	0	2	2	12	32	66	74	32	7	0	227
MB Population Base	169081	86245	96194	75064	49754	42892	29871	11360	1434	41	561936
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
1994											
# of CRC	0	1	1	10	27	62	76	35	2	0	214
MB Population Base	168765	83657	96122	77310	50966	42605	30049	11764	1508	37	562784
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
1995											
# of CRC	0	0	2	8	30	57	60	38	5	0	200
MB Population Base	168598	81646	95620	79544	52159	42332	30247	12210	1541	46	563943
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
1996											
# of CRC	0	1	6	16	30	62	77	21	4	0	217
MB Population Base	168264	80197	94519	81954	53643	42127	30471	12486	1557	48	565266
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
1997											
# of CRC	0	0	5	20	35	61	82	38	1	0	242
MB Population Base	167852	79272	92457	83236	56412	41900	30671	12755	1563	47	566165
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
1998											
# of CRC	0	1	3	15	45	85	76	39	9	0	273
MB Population Base	166466	78195	90171	84183	58858	41781	30985	12770	1647	41	565097
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
1984-1998											
Total # CRC	0	12	40	167	449	973	1023	463	68	1	3196
Total MB Population Base	2557915	1373839	1379058	1057654	763102	643592	434623	161534	20859	646	8392825
Total CRC Rate	0.0E+00	8.7E-06	2.9E-05	1.6E-04	5.9E-04	1.5E-03	2.4E-03	2.9E-03	3.3E-03	1.5E-03	3.8E-04

## APPENDIX C. PYAR MATRICES - OVERALL RISK

Table 1C. PYAR Matrix, Females, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	1.1	2.6	5.6	4.0	9.6	13.6	6.6	3.5	0.1	0.0	46.7
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985											
PYAR	8.1	6.3	20.9	16.7	34.9	44.3	32.6	15.7	1.8	0.0	181.2
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1986											
PYAR	18.4	15.0	38.1	31.8	53.8	76.5	61.3	25.9	2.1	0.0	322.8
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1987											
PYAR	24.9	25.3	61.8	62.6	69.6	95.3	94.5	38.8	5.6	0.0	478.4
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.7
1988											
PYAR	28.2	44.6	96.0	94.3	83.6	119.0	118.8	51.2	12.5	0.0	648.3
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.1	0.0	0.9
1989											
PYAR	36.2	53.9	114.1	121.1	96.8	136.7	139.3	67.7	17.2	0.5	783.5
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.0	1.0
1990											
PYAR	49.6	65.0	126.7	142.6	113.3	150.7	154.6	91.2	22.9	1.0	917.6
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.0	1.1
1991											
PYAR	55.2	62.9	137.2	157.9	124.6	166.0	170.0	111.9	30.7	1.0	1017.4
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.1	0.0	1.3
1992											
PYAR	61.7	53.5	140.9	165.5	140.9	170.6	204.6	129.3	36.6	1.1	1104.7
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.1	0.0	1.6
1993											
PYAR	65.4	46.7	139.3	177.8	148.8	178.9	223.9	154.8	39.9	2.0	1177.4
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.1	0.1	0.2	0.6	0.5	0.2	0.0	1.7
1994											
PYAR	71.5	40.8	129.3	184.3	163.3	185.9	223.3	183.3	48.0	2.4	1232.1
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.6	0.2	0.0	1.7
1995											
PYAR	76.8	33.8	118.9	189.1	181.8	187.1	234.5	212.0	59.4	3.8	1297.2
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.2	0.0	2.1
1996											
PYAR	80.4	28.6	113.6	192.0	193.4	190.6	252.8	236.8	70.7	5.1	1364.0
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.7	0.7	0.2	0.0	2.0
1997											
PYAR	84.3	22.6	111.0	193.2	203.3	202.8	254.9	261.4	80.3	8.1	1421.7
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.3	0.6	1.1	0.4	0.0	2.6
1998											
PYAR	88.0	15.9	104.5	193.9	210.5	201.5	266.1	277.1	88.9	16.0	1462.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.1	0.1	0.2	0.8	0.8	0.3	0.1	2.5
1984-1998											
PYAR	13,455.2										
Observed CRC	18.0										
Expected CRC	19.9										
SIR	0.9										
95% CI	0.5-1.4										

Table 2C. PYAR Matrix, Males, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	8.2	3.0	3.8	5.7	14.7	17.0	11.7	2.3	0.7	0.0	67.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985											
PYAR	39.5	15.5	18.3	29.6	42.1	56.4	43.3	12.4	1.1	0.0	258.3
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1986											
PYAR	83.4	30.2	41.4	57.6	61.8	88.7	65.1	24.0	2.3	0.0	454.5
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.0	0.7
1987											
PYAR	115.3	40.9	55.4	77.0	83.1	123.6	91.9	33.8	5.4	0.0	626.3
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.0	0.0	0.9
1988											
PYAR	144.8	46.3	75.5	94.2	103.0	146.8	122.2	53.3	7.0	0.0	793.1
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.3	0.1	0.0	1.1
1989											
PYAR	175.6	49.8	90.2	116.6	114.8	173.8	149.0	70.7	8.0	0.0	948.4
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.4	0.1	0.0	1.6
1990											
PYAR	210.2	48.0	103.9	139.2	135.1	202.8	174.6	93.6	9.0	0.0	1116.5
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.7	0.6	0.1	0.0	1.9
1991											
PYAR	241.9	43.4	111.3	153.6	154.3	221.1	197.4	110.2	13.8	0.0	1247.0
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.5	0.8	0.6	0.1	0.0	2.1
1992											
PYAR	266.3	47.8	117.8	155.9	175.9	232.3	230.3	127.2	19.9	0.0	1373.2
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.5	0.8	0.7	0.1	0.0	2.4
1993											
PYAR	285.9	42.8	122.3	159.0	189.5	234.5	262.5	147.5	27.8	0.4	1472.1
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.6	1.0	0.8	0.2	0.0	2.8
1994											
PYAR	315.0	34.9	129.2	161.6	209.3	242.0	285.7	170.4	37.7	2.3	1587.9
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.5	1.2	0.9	0.1	0.0	3.0
1995											
PYAR	341.3	29.3	127.2	163.4	223.7	253.0	305.3	189.7	48.9	3.6	1685.2
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.5	1.2	1.0	0.3	0.0	3.2
1996											
PYAR	359.3	24.7	125.0	170.3	232.5	271.4	329.0	204.1	56.9	5.5	1,778.6
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.7	1.2	0.8	0.3	0.0	3.1
1997											
PYAR	382.1	19.8	125.8	171.0	235.2	284.9	344.7	222.1	66.2	6.8	1,858.6
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.1	0.2	0.6	1.4	1.0	0.3	0.0	3.6
1998											
PYAR	408.1	16.0	116.5	182.1	232.5	288.5	344.2	245.6	83.4	7.2	1,924.0
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.8	1.4	1.4	0.6	0.0	4.5
1984-1998											
PYAR	17,190.6										
Observed CRC	31.0										
Expected CRC	31.4										
SIR	1.0										
95% CI	0.7-1.4										

Table 3C. PYAR Matrix, Females, OneYear of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985											
PYAR	1.1	2.2	5.7	4.1	9.3	13.2	7.5	3.5	0.1	0.0	46.7
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1986											
PYAR	8.1	4.8	20.7	16.1	31.6	47.2	33.9	16.9	1.8	0.0	181.2
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1987											
PYAR	17.9	13.1	36.3	34.1	51.3	72.3	67.0	26.5	4.3	0.0	322.8
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1988											
PYAR	23.3	21.6	63.5	62.7	63.4	99.7	93.2	43.1	9.4	0.0	479.8
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.0	0.7
1989											
PYAR	27.8	35.2	94.5	97.4	80.3	120.0	118.9	56.7	14.6	0.5	645.8
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.1	0.0	0.9
1990											
PYAR	35.6	47.5	110.3	121.4	98.1	135.1	136.5	75.8	21.8	1.0	783.2
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.0	0.9
1991											
PYAR	47.7	56.0	127.4	140.3	115.6	146.2	151.6	100.4	29.8	1.0	915.8
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.1	0.0	1.2
1992											
PYAR	54.4	52.5	135.9	155.7	128.8	155.6	177.4	120.5	36.6	1.1	1,018.4
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.1	0.0	1.4
1993											
PYAR	60.3	45.4	133.9	166.8	139.7	164.3	205.0	145.5	38.9	2.0	1,101.8
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.2	0.0	1.6
1994											
PYAR	65.2	38.5	127.2	176.8	155.5	175.5	213.6	174.8	48.0	2.4	1,177.3
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.5	0.2	0.0	1.6
1995											
PYAR	70.0	33.8	116.5	181.3	171.0	179.5	216.0	199.7	59.4	3.8	1,231.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.2	0.0	1.9
1996											
PYAR	76.6	27.1	109.8	186.3	186.3	177.4	233.8	226.8	70.7	5.1	1,299.9
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.2	0.0	1.9
1997											
PYAR	80.2	22.1	107.4	185.0	194.8	189.1	241.9	251.4	80.3	8.1	1,360.3
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	0.4	0.0	2.5
1998											
PYAR	84.3	15.9	103.7	188.5	206.2	194.5	254.2	269.2	88.5	16.0	1,420.9
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.8	0.8	0.3	0.1	2.4
1984-1998											
PYAR	11,984.9										
Observed CRC	6										
Expected CRC	18.4										
SIR	0.3										
95% CI	0.1-0.7										

Table 4C. PYAR Matrix, Males, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	7.0	3.9	3.2	6.0	12.7	17.0	13.2	3.3	0.7	0.0	67.0
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1986											
PYAR	38.2	14.3	19.0	28.8	42.2	54.9	45.2	14.4	1.1	0.0	258.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1987											
PYAR	82.5	27.0	40.9	55.7	61.4	89.7	67.0	26.3	3.1	0.0	453.7
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.6
1988											
PYAR	115.6	36.9	55.3	74.4	82.5	119.4	95.0	43.0	5.8	0.0	627.9
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.0	0.0	0.9
1989											
PYAR	144.5	38.9	71.0	96.7	96.8	143.8	126.9	64.7	7.8	0.0	790.9
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.4	0.1	0.0	1.4
1990											
PYAR	174.7	41.8	86.4	116.2	111.2	176.9	150.3	79.8	9.0	0.0	946.4
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.5	0.1	0.0	1.6
1991											
PYAR	209.6	37.9	102.1	137.5	138.8	193.5	180.6	100.8	13.8	0.0	1,114.6
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.6	0.1	0.0	1.9
1992											
PYAR	240.2	39.8	106.7	144.5	161.7	210.3	205.8	121.5	19.9	0.0	1,250.4
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.7	0.1	0.0	2.2
1993											
PYAR	265.5	39.1	113.0	148.6	173.4	218.4	238.4	142.0	26.3	0.4	1,365.0
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.5	0.9	0.8	0.2	0.0	2.6
1994											
PYAR	285.9	31.9	119.6	151.7	189.3	225.1	264.8	162.8	36.3	2.3	1,469.6
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.5	1.1	0.9	0.1	0.0	2.8
1995											
PYAR	314.4	26.9	121.5	157.4	210.3	231.2	288.1	186.1	47.8	3.6	1,587.2
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.5	1.1	1.0	0.2	0.0	3.0
1996											
PYAR	340.5	23.4	120.9	161.4	217.5	255.2	306.7	198.6	56.9	5.5	1,686.5
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.6	1.1	0.7	0.3	0.0	3.0
1997											
PYAR	356.8	18.8	121.3	163.9	224.2	266.2	330.2	215.4	65.4	6.8	1,769.0
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.1	0.2	0.6	1.3	1.0	0.3	0.0	3.5
1998											
PYAR	380.7	16.0	113.7	174.7	225.0	281.0	335.1	240.7	83.3	7.2	1,857.3
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.8	1.4	1.3	0.6	0.0	4.4

## 1984-1998

PYAR	15,243.5
Observed CRC	14
Expected CRC	28.5
SIR	0.5
95% CI	0.3-0.8

Table 5C. PYAR Matrix, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	1.4E-02
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	1.1	1.7	4.2	5.0	6.0	12.5	10.7	4.0	1.6	0.0	46.7
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	8.1	2.0	16.4	20.3	17.0	46.2	37.1	25.1	7.9	0.8	180.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1991											
PYAR	16.4	5.5	35.3	35.8	33.4	75.1	63.6	41.4	13.9	1.0	321.4
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.5
1992											
PYAR	22.9	8.1	52.1	61.2	60.2	90.5	93.5	63.3	23.1	1.1	476.0
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.0	0.8
1993											
PYAR	27.8	13.4	78.6	97.2	82.9	104.3	121.0	84.7	31.1	2.0	642.8
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.0	1.0
1994											
PYAR	34.9	20.5	88.4	123.7	108.4	113.4	136.2	110.8	41.8	2.4	780.5
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.3	0.2	0.0	1.1
1995											
PYAR	44.6	27.0	97.3	138.4	134.9	125.0	153.0	137.4	52.2	3.8	913.5
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.2	0.0	1.4
1996											
PYAR	52.0	23.0	100.1	151.5	148.3	131.8	176.1	163.1	65.4	5.1	1,016.3
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.2	0.0	1.5
1997											
PYAR	59.1	17.6	96.9	156.2	159.2	144.9	187.5	195.1	75.1	8.1	1,099.8
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.8	0.3	0.0	2.0
1998											
PYAR	63.8	11.9	94.1	164.8	171.0	149.5	204.2	215.3	84.9	16.0	1,175.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.6	0.3	0.1	2.0
1984-1998											
PYAR	6,653.1										
Observed CRC	2										
Expected CRC	10.6										
SIR	0.2										
95% CI	0.02-0.7										





Table 7C. PYAR Matrix, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	1.1	0.0	2.6	5.6	4.0	9.6	13.6	6.3	3.5	0.1	46.4
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1995											
PYAR	8.1	0.0	6.3	20.9	16.7	34.9	44.1	31.1	15.7	1.8	179.5
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.4
1996											
PYAR	16.4	2.0	15.1	38.2	31.9	53.9	75.7	59.0	25.9	2.1	320.3
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1997											
PYAR	21.9	3.0	25.3	61.8	62.7	69.7	94.4	90.8	37.8	5.6	472.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.0	1.0
1998											
PYAR	26.8	1.4	44.5	95.8	94.1	83.5	117.7	114.6	50.1	12.4	640.8
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.3	0.2	0.1	1.2
1984-1998											
PYAR	1,659.9										
Observed CRC	0										
Expected CRC	3.1										
SIR	0.0										
95% CI	-										





Table 2D. PYAR Matrix for Proximal Colorectal Cancer, Males, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	8.2	3.0	3.8	5.7	14.7	17.0	11.7	2.3	0.7	0.0	67.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	39.5	15.5	18.3	29.6	42.1	56.4	43.3	12.4	1.1	0.0	258.3
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	83.4	30.2	41.4	57.6	61.8	88.7	65.1	24.0	2.3	0.0	454.5
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1987											
PYAR	115.3	40.9	55.4	77.0	83.1	123.6	91.9	33.8	5.4	0.0	626.3
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1988											
PYAR	144.8	46.3	75.5	94.2	103.0	146.8	122.2	53.3	7.0	0.0	793.1
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1989											
PYAR	175.6	49.8	90.2	116.6	114.8	173.8	149.0	70.7	8.0	0.0	948.4
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1990											
PYAR	210.2	48.0	103.9	139.2	135.1	202.8	174.6	93.6	9.0	0.0	1,116.5
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.7
1991											
PYAR	241.9	43.4	111.3	153.6	154.3	221.1	197.4	110.2	13.8	0.0	1,247.0
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1992											
PYAR	266.3	47.8	117.8	155.9	175.9	232.3	230.3	127.2	19.9	0.0	1,373.2
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.7
1993											
PYAR	285.9	42.8	122.3	159.0	189.5	234.5	262.5	147.5	27.8	0.4	1,472.1
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.8
1994											
PYAR	315.0	34.9	129.2	161.6	209.3	242.0	285.7	170.4	37.7	2.3	1,587.9
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3	0.1	0.0	0.9
1995											
PYAR	341.3	29.3	127.2	163.4	223.7	253.0	305.3	189.7	48.9	3.6	1,685.2
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.3	0.1	0.0	1.1
1996											
PYAR	359.3	24.7	125.0	170.3	232.5	271.4	329.0	204.1	56.9	5.5	1,778.6
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	1.0
1997											
PYAR	382.1	19.8	125.8	171.0	235.2	284.9	344.7	222.1	66.2	6.8	1,858.6
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.2	0.0	1.0
1998											
PYAR	408.1	16.0	116.5	182.1	232.5	288.5	344.2	245.6	83.4	7.2	1,924.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.6	0.1	0.0	1.4

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1984-1998	
PYAR	17,190.6
Observed CRC	14
Expected CRC	9.7
SIR	1.4
95% CI	0.8-2.3

Table 3D. PYAR Matrix for Proximal Colorectal Cancer, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0	0	0	0	0	0	0	0	0	0	0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	1.1	2.2	5.7	4.1	9.3	13.2	7.5	3.5	0.1	0.0	46.7
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	8.1	4.8	20.7	16.1	31.6	47.2	33.9	16.9	1.8	0.0	181.2
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	17.9	13.1	36.3	34.1	51.3	72.3	67.0	26.5	4.3	0.0	322.8
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1988											
PYAR	23.3	21.6	63.5	62.7	63.4	99.7	93.2	43.1	9.4	0.0	479.8
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1989											
PYAR	27.8	35.2	94.5	97.4	80.3	120.0	118.9	56.7	14.6	0.5	645.8
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1990											
PYAR	35.6	47.5	110.3	121.4	98.1	135.1	136.5	75.8	21.8	1.0	783.2
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1991											
PYAR	47.7	56.0	127.4	140.3	115.6	146.2	151.6	100.4	29.8	1.0	915.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.5
1992											
PYAR	54.4	52.5	135.9	155.7	128.8	155.6	177.4	120.5	36.6	1.1	1,018.4
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1993											
PYAR	60.3	45.4	133.9	166.8	139.7	164.3	205.0	145.5	38.9	2.0	1,101.8
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.6
1994											
PYAR	65.2	38.5	127.2	176.8	155.5	175.5	213.6	174.8	48.0	2.4	1,177.3
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1995											
PYAR	70.0	33.8	116.5	181.3	171.0	179.5	216.0	199.7	59.4	3.8	1,231.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.7
1996											
Observed CRC	0	0	0	0	0	0	0	0	0	0	0
PYAR	76.6	27.1	109.8	186.3	186.3	177.4	233.8	226.8	70.7	5.1	1,299.9
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.9
SIR	#DIV/0!	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	#DIV/0!	1.4
1997											
PYAR	80.2	22.1	107.4	185.0	194.8	189.1	241.9	251.4	80.3	8.1	1,360.3
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.1	0.0	1.1
1998											
PYAR	84.3	15.9	103.7	188.5	206.2	194.5	254.2	269.2	88.5	16.0	1,420.9
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.2	0.0	1.1
1984-1998											
PYAR	11,984.9										
Observed CRC	3										
Expected CRC	7.4										
SIR	0.4										
95% CI	0.1-1.2										

Table 4D. PYAR Matrix for Proximal Colorectal Cancer, Males, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	7.0	3.9	3.2	6.0	12.7	17.0	13.2	3.3	0.7	0.0	67.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	38.2	14.3	19.0	28.8	42.2	54.9	45.2	14.4	1.1	0.0	258.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1987											
PYAR	82.5	27.0	40.9	55.7	61.4	89.7	67.0	26.3	3.1	0.0	453.7
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1988											
PYAR	115.6	36.9	55.3	74.4	82.5	119.4	95.0	43.0	5.8	0.0	627.9
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1989											
PYAR	144.5	38.9	71.0	96.7	96.8	143.8	126.9	64.7	7.8	0.0	790.9
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1990											
PYAR	174.7	41.8	86.4	116.2	111.2	176.9	150.3	79.8	9.0	0.0	946.4
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1991											
PYAR	209.6	37.9	102.1	137.5	138.8	193.5	180.6	100.8	13.8	0.0	1,114.6
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1992											
PYAR	240.2	39.8	106.7	144.5	161.7	210.3	205.8	121.5	19.9	0.0	1,250.4
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.7
1993											
PYAR	265.5	39.1	113.0	148.6	173.4	218.4	238.4	142.0	26.3	0.4	1,365.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.8
1994											
PYAR	285.9	31.9	119.6	151.7	189.3	225.1	264.8	162.8	36.3	2.3	1,469.6
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3	0.0	0.0	0.9
1995											
PYAR	314.4	26.9	121.5	157.4	210.3	231.2	288.1	186.1	47.8	3.6	1,587.2
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3	0.1	0.0	1.1
1996											
PYAR	340.5	23.4	120.9	161.4	217.5	255.2	306.7	198.6	56.9	5.5	1,686.5
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.9
1997											
PYAR	356.8	18.8	121.3	163.9	224.2	266.2	330.2	215.4	65.4	6.8	1,769.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.2	0.0	0.9
1998											
PYAR	380.7	16.0	113.7	174.7	225.0	281.0	335.1	240.7	83.3	7.2	1,857.3
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.1	0.0	1.4
1984-1998											
PYAR	15,243.5										
Observed CRC	4										
Expected CRC	8.8										
SIR	0.5										
95% CI	0.1-1.3										

Table 5D. PYAR Matrix for Proximal Colorectal Cancer, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	1.1	1.7	4.2	5.0	6.0	12.5	10.7	4.0	1.6	0.0	46.7
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	8.1	2.0	16.4	20.3	17.0	46.2	37.1	25.1	7.9	0.8	180.9
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	16.4	5.5	35.3	35.8	33.4	75.1	63.6	41.4	13.9	1.0	321.4
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1992											
PYAR	22.9	8.1	52.1	61.2	60.2	90.5	93.5	63.3	23.1	1.1	476.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1993											
PYAR	27.8	13.4	78.6	97.2	82.9	104.3	121.0	84.7	31.1	2.0	642.8
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.4
1994											
PYAR	34.9	20.5	88.4	123.7	108.4	113.4	136.2	110.8	41.8	2.4	780.5
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.4
1995											
PYAR	44.6	27.0	97.3	138.4	134.9	125.0	153.0	137.4	52.2	3.8	913.5
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.5
1996											
PYAR	52.0	23.0	100.1	151.5	148.3	131.8	176.1	163.1	65.4	5.1	1,016.3
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1997											
PYAR	59.1	17.6	96.9	156.2	159.2	144.9	187.5	195.1	75.1	8.1	1,099.8
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.1	0.0	0.8
1998											
PYAR	63.8	11.9	94.1	164.8	171.0	149.5	204.2	215.3	84.9	16.0	1,175.3
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.0	0.9
1984-1998											
PYAR	6,653.1										
Observed CRC	0										
Expected CRC	4.4										
SIR	0.0										
95% CI	-										



Table 6D. PYAR Matrix for Proximal Colorectal Cancer, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	7.0	2.1	3.6	6.5	6.5	18.9	13.8	7.8	0.7	0.0	67.0
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	37.9	7.7	18.4	25.0	31.7	58.9	44.4	30.0	2.9	0.0	256.7
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1991											
PYAR	82.5	11.3	40.1	47.5	57.5	84.1	74.4	48.3	6.1	0.0	451.7
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1992											
PYAR	115.4	14.7	52.7	65.3	76.1	110.5	110.7	65.1	14.9	0.0	625.3
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1993											
PYAR	142.7	18.3	65.4	82.6	95.2	127.2	141.6	89.8	22.8	0.4	785.9
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1994											
PYAR	173.2	18.2	79.6	93.8	119.5	140.8	173.9	110.2	29.5	2.3	941.0
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1995											
PYAR	207.4	16.8	85.4	113.4	147.1	152.0	200.6	141.0	42.0	3.5	1,109.2
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.8
1996											
PYAR	238.8	14.2	88.7	125.9	161.7	170.7	228.2	159.3	52.5	4.5	1,244.4
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1997											
PYAR	263.5	11.4	96.2	131.5	167.9	190.3	249.1	179.7	62.0	5.8	1,357.3
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.0	0.8
1998											
PYAR	283.9	8.0	95.5	141.9	178.6	204.7	258.6	205.1	79.6	6.2	1,462.1
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.0	0.0	1.1
1984-1998											
PYAR	8,300.4										
Observed CRC	2										
Expected CRC	5.2										
SIR	0.4										
95% CI	0.05-1.4										

Table 7D. PYAR Matrix for Proximal Colorectal Cancer, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	1.1	0.0	2.6	5.6	4.0	9.6	13.6	6.3	3.5	0.1	46.4
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	8.1	0.0	6.3	20.9	16.7	34.9	44.1	31.1	15.7	1.8	179.5
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1996											
PYAR	16.4	2.0	15.1	38.2	31.9	53.9	75.7	59.0	25.9	2.1	320.3
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1997											
PYAR	21.9	3.0	25.3	61.8	62.7	69.7	94.4	90.8	37.8	5.6	472.9
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.4
1998											
PYAR	26.8	1.4	44.5	95.8	94.1	83.5	117.7	114.6	50.1	12.4	640.8
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.5
1984-1998											
PYAR	1,659.9										
Observed CRC	0										
Expected CRC	1.4										
SIR	0.0										
95% CI	-										

Table 8D. PYAR Matrix for Proximal Colorectal Cancer, Males, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	7.0	1.1	2.9	3.8	5.7	14.7	16.3	11.7	2.3	0.7	66.3
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1995											
PYAR	37.9	1.6	15.5	18.3	29.6	42.1	55.4	42.4	11.9	1.0	255.8
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1996											
PYAR	82.8	0.9	30.3	41.5	57.8	62.0	87.8	64.3	23.3	1.3	452.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1997											
PYAR	115.1	0.2	40.9	55.4	77.1	83.2	120.9	90.1	33.9	4.4	621.2
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.4
1998											
PYAR	142.7	1.8	46.2	75.3	94.0	102.7	143.6	119.3	53.1	6.0	784.6
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.6
1984-1998											
PYAR	2,179.8										
Observed CRC	0										
Expected CRC	1.5										
SIR	0.0										
95% CI	-										





Table 11D. PYAR Matrix for Distal Colorectal Cancer, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	1.1	2.2	5.7	4.1	9.3	13.2	7.5	3.5	0.1	0.0	46.7
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	8.1	4.8	20.7	16.1	31.6	47.2	33.9	16.9	1.8	0.0	181.2
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	17.9	13.1	36.3	34.1	51.3	72.3	67.0	26.5	4.3	0.0	322.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3
1988											
PYAR	23.3	21.6	63.5	62.7	63.4	99.7	93.2	43.1	9.4	0.0	479.8
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1989											
PYAR	27.8	35.2	94.5	97.4	80.3	120.0	118.9	56.7	14.6	0.5	645.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1990											
PYAR	35.6	47.5	110.3	121.4	98.1	135.1	136.5	75.8	21.8	1.0	783.2
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.5
1991											
PYAR	47.7	56.0	127.4	140.3	115.6	146.2	151.6	100.4	29.8	1.0	915.8
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.6
1992											
PYAR	54.4	52.5	135.9	155.7	128.8	155.6	177.4	120.5	36.6	1.1	1,018.4
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.6
1993											
PYAR	60.3	45.4	133.9	166.8	139.7	164.3	205.0	145.5	38.9	2.0	1,101.8
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.7
1994											
PYAR	65.2	38.5	127.2	176.8	155.5	175.5	213.6	174.8	48.0	2.4	1,177.3
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.1	0.0	0.9
1995											
PYAR	70.0	33.8	116.5	181.3	171.0	179.5	216.0	199.7	59.4	3.8	1,231.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.0	0.0	0.8
1996											
PYAR	76.6	27.1	109.8	186.3	186.3	177.4	233.8	226.8	70.7	5.1	1,299.9
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.1	0.0	1.1
1997											
PYAR	80.2	22.1	107.4	185.0	194.8	189.1	241.9	251.4	80.3	8.1	1,360.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.1	0.0	1.0
1998											
PYAR	84.3	15.9	103.7	188.5	206.2	194.5	254.2	269.2	88.5	16.0	1,420.9
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.1	0.0	1.2
1984-1998											
PYAR	11,984.9										
Observed CRC	3										
Expected CRC	8.5										
SIR	0.4										
95% CI	0.1-1.2										

Table 12D. PYAR Matrix for Distal Colorectal Cancer, Males, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	7.0	3.9	3.2	6.0	12.7	17.0	13.2	3.3	0.7	0.0	67.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	38.2	14.3	19.0	28.8	42.2	54.9	45.2	14.4	1.1	0.0	258.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3
1987											
PYAR	82.5	27.0	40.9	55.7	61.4	89.7	67.0	26.3	3.1	0.0	453.7
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1988											
PYAR	115.6	36.9	55.3	74.4	82.5	119.4	95.0	43.0	5.8	0.0	627.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.5
1989											
PYAR	144.5	38.9	71.0	96.7	96.8	143.8	126.9	64.7	7.8	0.0	790.9
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.0	0.0	0.9
1990											
PYAR	174.7	41.8	86.4	116.2	111.2	176.9	150.3	79.8	9.0	0.0	946.4
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.0	0.0	0.9
1991											
PYAR	209.6	37.9	102.1	137.5	138.8	193.5	180.6	100.8	13.8	0.0	1,114.6
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.3	0.1	0.0	1.2
1992											
PYAR	240.2	39.8	106.7	144.5	161.7	210.3	205.8	121.5	19.9	0.0	1,250.4
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.1	0.0	1.3
1993											
PYAR	265.5	39.1	113.0	148.6	173.4	218.4	238.4	142.0	26.3	0.4	1,365.0
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.4	0.1	0.0	1.6
1994											
PYAR	285.9	31.9	119.6	151.7	189.3	225.1	264.8	162.8	36.3	2.3	1,469.6
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.7	0.5	0.0	0.0	1.7
1995											
PYAR	314.4	26.9	121.5	157.4	210.3	231.2	288.1	186.1	47.8	3.6	1,587.2
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.6	0.2	0.0	1.8
1996											
PYAR	340.5	23.4	120.9	161.4	217.5	255.2	306.7	198.6	56.9	5.5	1,686.5
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.8	0.3	0.1	0.0	1.8
1997											
PYAR	356.8	18.8	121.3	163.9	224.2	266.2	330.2	215.4	65.4	6.8	1,769.0
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.9	0.6	0.0	0.0	2.1
1998											
PYAR	380.7	16.0	113.7	174.7	225.0	281.0	335.1	240.7	83.3	7.2	1,857.3
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.2	0.6	0.8	0.7	0.5	0.0	2.8
1984-1998											
PYAR	15,243.5										
Observed CRC	7										
Expected CRC	17.4										
SIR	0.4										
95% CI	0.2-0.8										

Table 13D. PYAR Matrix for Distal Colorectal Cancer, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	1.1	1.7	4.2	5.0	6.0	12.5	10.7	4.0	1.6	0.0	46.7
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	8.1	2.0	16.4	20.3	17.0	46.2	37.1	25.1	7.9	0.8	180.9
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	16.4	5.5	35.3	35.8	33.4	75.1	63.6	41.4	13.9	1.0	321.4
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1992											
PYAR	22.9	8.1	52.1	61.2	60.2	90.5	93.5	63.3	23.1	1.1	476.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.3
1993											
PYAR	27.8	13.4	78.6	97.2	82.9	104.3	121.0	84.7	31.1	2.0	642.8
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1994											
PYAR	34.9	20.5	88.4	123.7	108.4	113.4	136.2	110.8	41.8	2.4	780.5
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1995											
PYAR	44.6	27.0	97.3	138.4	134.9	125.0	153.0	137.4	52.2	3.8	913.5
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0	0.6
1996											
PYAR	52.0	23.0	100.1	151.5	148.3	131.8	176.1	163.1	65.4	5.1	1,016.3
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	0.0	0.8
1997											
PYAR	59.1	17.6	96.9	156.2	159.2	144.9	187.5	195.1	75.1	8.1	1,099.8
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.1	0.0	0.8
1998											
PYAR	63.8	11.9	94.1	164.8	171.0	149.5	204.2	215.3	84.9	16.0	1,175.3
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.1	0.0	1.0
1984-1998											
PYAR	6,653.1										
Observed CRC	2										
Expected CRC	4.9										
SIR	0.4										
95% CI	0.05-1.4										



Table 14D. PYAR Matrix for Distal Colorectal Cancer, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	7.0	2.1	3.6	6.5	6.5	18.9	13.8	7.8	0.7	0.0	67.0
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	37.9	7.7	18.4	25.0	31.7	58.9	44.4	30.0	2.9	0.0	256.7
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1991											
PYAR	82.5	11.3	40.1	47.5	57.5	84.1	74.4	48.3	6.1	0.0	451.7
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1992											
PYAR	115.4	14.7	52.7	65.3	76.1	110.5	110.7	65.1	14.9	0.0	625.3
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.7
1993											
PYAR	142.7	18.3	65.4	82.6	95.2	127.2	141.6	89.8	22.8	0.4	785.9
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.1	0.0	1.0
1994											
PYAR	173.2	18.2	79.6	93.8	119.5	140.8	173.9	110.2	29.5	2.3	941.0
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.0	0.0	1.1
1995											
PYAR	207.4	16.8	85.4	113.4	147.1	152.0	200.6	141.0	42.0	3.5	1,109.2
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.1	0.0	1.3
1996											
PYAR	238.8	14.2	88.7	125.9	161.7	170.7	228.2	159.3	52.5	4.5	1,244.4
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.3	0.1	0.0	1.4
1997											
PYAR	263.5	11.4	96.2	131.5	167.9	190.3	249.1	179.7	62.0	5.8	1,357.3
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.7	0.5	0.0	0.0	1.7
1998											
PYAR	283.9	8.0	95.5	141.9	178.6	204.7	258.6	205.1	79.6	6.2	1,462.1
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.6	0.4	0.0	2.3
1984-1998											
PYAR	8,300.4										
Observed CRC	2										
Expected CRC	10.3										
SIR	0.2										
95% CI	0.02-0.7										





## APPENDIX E. PYAR MATRICES - RISK BY SURGERY TYPE

Table 1E. PYAR Matrix, Gastrectomy, Females, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	1.0	1.2	2.4	4.1	1.8	0.8	0.1	0.0	11.4
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	2.7	4.7	5.6	11.6	6.6	2.3	1.0	0.0	34.4
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	1.0	0.4	4.5	8.1	7.8	17.2	15.2	3.5	1.0	0.0	58.7
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	1.0	1.0	4.2	11.0	11.2	18.6	25.3	7.3	1.1	0.0	80.8
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1988											
PYAR	0.3	2.1	4.2	15.2	15.6	20.7	33.1	10.6	2.9	0.0	104.5
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1989											
PYAR	0.0	1.2	6.0	15.8	19.8	25.0	42.2	11.9	4.2	0.0	126.0
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1990											
PYAR	0.0	1.0	7.0	17.2	21.6	28.7	47.4	16.5	5.0	0.0	144.5
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1991											
PYAR	0.0	1.8	7.0	17.5	23.0	31.8	50.2	23.7	5.0	0.0	160.0
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1992											
PYAR	0.0	2.0	6.4	17.5	23.9	35.9	54.8	27.4	6.9	0.1	174.8
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1993											
PYAR	0.0	2.0	5.8	17.6	24.2	37.4	59.2	33.3	6.3	1.0	186.7
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.4
1994											
PYAR	0.2	2.0	4.3	14.0	29.3	37.4	59.0	39.3	7.7	1.4	194.6
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.4
1995											
PYAR	1.0	1.5	4.4	14.1	31.5	34.5	63.1	44.8	10.4	2.5	207.8
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4
1996											
PYAR	1.0	1.0	5.0	14.5	31.9	34.6	65.7	52.3	13.2	3.0	222.2
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4
1997											
PYAR	1.0	1.0	5.0	13.4	31.5	40.6	60.6	58.8	17.5	3.0	232.3
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1998											
PYAR	2.5	0.3	6.1	14.0	30.7	42.7	56.3	68.6	19.2	4.1	244.5
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1984-1998											
PYAR	2,183.0										
Observed CRC	7										
Expected CRC	4.4										
SIR	1.6										
95% CI	0.6-3.3										

Table 2E. PYAR Matrix, Gastrectomy, Males, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	1.7	3.3	2.3	2.8	1.1	0.7	0.0	11.8
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.4	0.2	6.7	7.4	12.7	9.2	3.4	1.1	0.0	41.0
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	0.0	0.4	2.3	8.4	13.8	21.5	12.3	5.0	2.0	0.0	65.6
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1987											
PYAR	0.2	2.1	4.1	11.9	17.2	35.2	18.0	5.4	2.0	0.0	96.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1988											
PYAR	1.0	2.3	4.6	15.5	18.8	39.6	24.3	10.5	2.0	0.0	118.5
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1989											
PYAR	1.0	2.9	5.9	15.7	25.3	39.7	33.7	13.0	2.0	0.0	139.1
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1990											
PYAR	1.0	4.0	5.7	16.0	30.0	46.0	40.4	17.4	1.0	0.0	161.5
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1991											
PYAR	1.0	3.5	7.1	16.0	31.4	49.7	40.9	24.4	1.0	0.0	174.8
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1992											
PYAR	0.1	3.9	9.8	15.3	34.5	54.1	47.7	29.2	1.5	0.0	196.0
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1993											
PYAR	0.0	4.0	8.6	14.3	38.5	53.6	54.6	32.3	3.4	0.0	209.2
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1994											
PYAR	1.2	3.6	10.7	12.8	42.0	49.7	66.1	34.5	5.2	0.9	226.7
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.6
1995											
PYAR	2.0	2.4	10.7	15.7	39.1	53.1	73.4	37.1	7.8	1.0	242.2
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.7
1996											
PYAR	2.0	2.0	10.4	16.9	38.0	57.6	80.9	40.6	10.4	1.0	259.9
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.7
1997											
PYAR	2.6	1.0	12.4	16.9	36.7	59.1	85.1	45.5	12.8	1.0	273.0
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.8
1998											
PYAR	4.0	1.0	11.0	18.6	37.1	57.7	85.7	51.0	16.9	1.0	283.9
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.1	0.0	1.0
1984-1998											
PYAR	2,499.2										
Observed CRC	14										
Expected CRC	6.7										
SIR	2.1										
95% CI	1.1-3.5										

Table 3E. PYAR Matrix, Gastrectomy, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.7	1.5	2.0	4.1	2.2	0.8	0.1	0.0	11.4
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	2.3	5.1	5.0	11.5	7.2	2.3	1.0	0.0	34.4
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	1.0	0.4	3.7	7.6	8.4	14.8	17.7	4.1	1.0	0.0	58.6
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1988											
PYAR	0.3	1.8	3.8	10.0	12.8	17.3	25.0	8.9	1.3	0.0	81.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1989											
PYAR	0.0	1.2	4.5	15.5	14.8	19.7	33.7	10.2	3.8	0.0	103.3
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1990											
PYAR	0.0	1.0	5.2	15.1	19.1	25.3	42.2	13.6	4.2	0.0	125.6
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1991											
PYAR	0.0	1.0	7.0	15.5	21.9	28.1	45.5	19.9	5.0	0.0	143.8
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1992											
PYAR	0.0	1.8	6.4	16.2	21.9	33.6	48.0	25.7	6.9	0.1	160.4
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1993											
PYAR	0.0	2.0	5.8	15.7	22.1	34.3	54.7	32.5	6.3	1.0	174.4
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.4
1994											
PYAR	0.0	2.0	4.3	12.7	28.4	35.3	57.6	37.3	7.7	1.4	186.7
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.4
1995											
PYAR	0.2	1.5	3.8	12.6	30.6	32.0	58.7	41.7	10.4	2.5	193.9
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4
1996											
PYAR	1.0	1.0	4.3	13.9	30.0	30.9	60.5	50.2	13.2	3.0	208.0
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.4
1997											
PYAR	1.0	1.0	4.3	13.2	28.6	35.8	59.5	57.8	17.5	3.0	221.7
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1998											
PYAR	1.0	0.3	5.5	13.1	29.5	40.1	53.5	66.3	19.2	4.1	232.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.5
1984-1998											
PYAR	1,935.4										
Observed CRC	2										
Expected CRC	3.9										
SIR	0.5										
95% CI	0.1-1.8										

Table 4E. PYAR Matrix, Gastrectomy, Males, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	1.7	2.1	2.8	2.9	1.6	0.7	0.0	11.8
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.6	5.5	8.0	13.0	8.2	4.7	1.1	0.0	41.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	0.0	0.3	2.0	7.7	12.2	23.3	13.0	5.2	2.0	0.0	65.6
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	0.2	1.8	2.7	13.3	15.6	33.5	19.2	7.6	2.0	0.0	95.9
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1989											
PYAR	1.0	2.0	4.7	13.2	19.6	34.1	29.3	12.3	2.0	0.0	118.2
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1990											
PYAR	1.0	2.9	5.0	11.9	27.0	40.0	34.9	14.3	1.0	0.0	138.1
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1991											
PYAR	1.0	2.9	6.7	14.1	29.3	46.1	37.4	22.7	1.0	0.0	161.3
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1992											
PYAR	0.1	3.4	7.9	13.2	31.8	48.7	42.0	26.7	1.5	0.0	175.3
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.4
1993											
PYAR	0.0	4.0	6.8	13.9	34.0	50.6	49.7	30.7	3.4	0.0	193.1
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1994											
PYAR	0.0	3.6	7.8	11.9	38.0	47.8	61.0	32.6	5.2	0.9	208.7
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.6
1995											
PYAR	1.2	2.4	10.5	13.0	37.6	48.3	68.0	36.8	7.8	1.0	226.5
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.6
1996											
PYAR	2.0	2.0	10.1	15.7	33.7	53.2	73.8	39.0	10.4	1.0	240.9
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.6
1997											
PYAR	2.0	1.0	10.5	15.9	35.1	53.9	81.7	44.6	12.8	1.0	258.3
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.8
1998											
PYAR	2.6	1.0	9.7	16.5	35.6	56.6	82.1	50.5	16.9	1.0	272.4
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.9
1984-1998											
PYAR	2,207.2										
Observed CRC	6										
Expected CRC	6.0										
SIR	1.0										
95% CI	0.4-2.2										

Table 5E. PYAR Matrix, Gastrectomy, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	1.9	2.1	1.8	4.4	1.1	0.1	0.0	11.4
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.7	4.6	5.6	6.5	11.7	4.0	1.0	0.0	34.1
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	1.0	2.2	7.0	8.2	12.1	17.7	8.0	1.3	0.0	57.5
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	1.0	3.0	7.8	11.9	15.9	22.3	13.6	3.5	0.1	79.1
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1993											
PYAR	0.0	1.0	3.4	9.2	15.2	19.2	28.2	20.3	4.8	1.0	102.3
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1994											
PYAR	0.0	1.0	3.0	8.3	20.9	23.0	34.4	27.4	5.6	1.4	124.9
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1995											
PYAR	0.0	1.0	3.3	8.1	24.8	21.9	42.7	29.6	9.2	2.5	143.1
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1996											
PYAR	0.0	1.0	3.5	8.2	25.3	22.0	47.9	35.8	12.9	3.0	159.4
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1997											
PYAR	0.0	1.0	3.0	8.6	22.6	26.3	45.2	47.8	15.8	3.0	173.4
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.5
1998											
PYAR	0.0	0.3	3.5	10.3	22.4	28.5	42.9	56.6	17.2	4.1	185.7
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.4
1984-1998											
PYAR	1,070.8										
Observed CRC	1										
Expected CRC	2.3										
SIR	0.4										
95% CI	0.01-2.2										



Table 6E. PYAR Matrix, Gastrectomy, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	1.2	1.5	3.2	2.4	2.9	0.7	0.0	11.8
CRC Rate	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.4	1.7	8.4	12.0	10.8	6.7	1.0	0.0	40.9
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	0.3	1.0	3.4	12.7	18.7	16.9	10.7	1.0	0.0	64.6
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1992											
PYAR	0.0	1.0	2.5	6.5	16.0	28.5	23.2	15.7	1.5	0.0	94.9
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1993											
PYAR	0.0	2.0	3.9	6.7	18.9	33.5	29.6	19.4	2.6	0.0	116.5
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1994											
PYAR	0.0	2.0	5.9	5.1	23.8	35.6	38.2	22.1	3.5	0.9	137.1
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1995											
PYAR	0.0	2.3	6.6	7.0	26.4	36.0	47.0	25.9	7.5	1.0	159.8
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1996											
PYAR	0.0	2.0	6.6	8.8	26.0	34.5	53.2	30.5	10.4	1.0	173.1
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1997											
PYAR	0.0	1.0	7.2	10.2	25.5	35.4	59.8	37.5	12.4	1.0	189.9
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1998											
PYAR	0.0	1.0	5.7	11.2	27.6	39.0	60.5	43.8	16.0	1.0	205.7
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.7
1984-1998											
PYAR	1,194.4										
Observed CRC	1										
Expected CRC	3.5										
SIR	0.3										
95% CI	0.01-1.7										

Table 7E. PYAR Matrix, Gastrectomy, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	1.0	1.2	2.4	4.1	1.5	0.8	0.1	11.1
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.0	2.7	4.7	5.6	11.3	5.6	2.3	1.0	33.2
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1996											
PYAR	0.0	1.0	0.4	4.5	8.1	7.8	16.3	14.2	3.4	1.0	56.7
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	1.0	1.0	4.2	11.0	11.3	17.6	24.3	6.3	1.2	77.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2
1998											
PYAR	0.0	0.3	2.1	4.2	15.1	15.6	19.6	32.0	9.6	2.9	101.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1984-1998											
PYAR	280.1										
Observed CRC	0										
Expected CRC	0.7										
SIR	0.0										
95% CI	-										

Table 8E. PYAR Matrix, Gastrectomy, Males, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	0.0	1.7	3.3	2.3	2.8	1.1	0.7	11.8
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.4	0.2	6.7	7.4	12.7	9.2	3.4	1.0	40.9
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1996											
PYAR	0.0	0.0	0.4	2.3	8.4	13.8	21.4	12.3	5.0	1.0	64.7
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1997											
PYAR	0.0	0.2	2.1	4.1	11.9	17.2	33.8	17.2	5.4	1.0	92.9
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1998											
PYAR	0.0	1.0	2.3	4.6	15.5	18.7	38.5	23.3	10.5	1.0	115.2
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.4
1984-1998											
PYAR	325.5										
Observed CRC	1										
Expected CRC	1.1										
SIR	0.9										
95% CI	0.02-5.0										





Table 11E. PYAR Matrix, "Other" Surgeries, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	1.1	2.2	4.5	2.6	7.0	8.5	5.3	2.7	0.0	0.0	33.8
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	8.1	4.8	14.5	9.9	24.8	32.7	24.8	13.1	0.8	0.0	133.5
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1987											
PYAR	16.9	11.8	28.7	22.5	37.5	51.4	42.5	18.7	2.4	0.0	232.4
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1988											
PYAR	23.0	18.9	54.8	45.7	41.6	72.8	58.3	27.1	7.1	0.0	349.3
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1989											
PYAR	27.8	33.3	83.3	73.4	54.3	88.9	71.5	38.6	9.8	0.5	481.1
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.6
1990											
PYAR	35.6	46.1	98.4	95.4	65.2	98.0	78.9	52.9	16.6	1.0	588.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1991											
PYAR	47.7	55.0	111.9	112.9	79.6	105.2	89.4	71.2	22.1	1.0	695.9
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.1	0.0	0.8
1992											
PYAR	54.4	50.7	121.5	127.0	91.0	108.8	109.0	86.5	25.2	1.0	775.1
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.0	1.0
1993											
PYAR	60.3	43.4	122.3	136.4	100.6	114.9	127.2	100.6	27.6	1.0	834.4
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.1	0.0	1.1
1994											
PYAR	65.2	36.5	118.9	146.7	109.1	121.3	134.3	120.9	34.1	1.0	888.0
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.1	0.0	1.1
1995											
PYAR	69.8	32.3	108.2	152.8	118.1	126.6	134.9	139.5	41.8	1.3	925.2
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.1	0.0	1.3
1996											
PYAR	75.6	26.1	101.5	156.5	131.0	126.0	147.4	155.7	49.6	2.0	971.3
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.1	0.0	1.3
1997											
PYAR	79.2	21.1	99.2	156.8	142.7	129.4	158.1	166.2	55.5	4.1	1,012.3
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.7	0.2	0.0	1.7
1998											
PYAR	83.3	15.6	94.2	160.1	152.8	130.0	175.5	171.0	61.3	10.9	1,054.7
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.2	0.1	1.7
1984-1998											
PYAR	8,975.1										
Observed CRC	4										
Expected CRC	12.1										
SIR	0.3										
95% CI	0.1-0.8										



Table 13E. PYAR Matrix, "Other" Surgeries, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	1.1	1.7	3.7	3.1	3.6	10.6	5.7	2.9	1.5	0.0	33.8
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	8.1	2.0	12.8	13.7	9.5	38.9	21.5	19.3	6.9	0.8	133.5
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2
1991											
PYAR	16.4	4.5	29.2	24.9	19.0	59.8	38.4	28.0	10.9	1.0	232.1
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1992											
PYAR	22.9	7.1	44.8	48.6	37.5	67.7	59.4	42.8	15.5	1.0	347.4
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1993											
PYAR	27.8	12.4	72.0	79.6	54.8	77.4	77.8	55.2	21.3	1.0	479.2
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1994											
PYAR	34.9	19.5	83.2	104.1	71.5	83.0	87.2	71.8	30.0	1.0	586.0
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1995											
PYAR	44.6	26.0	90.9	119.8	93.5	92.4	94.2	96.0	35.7	1.3	694.3
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.1	0.0	0.9
1996											
PYAR	52.0	22.0	93.6	132.8	107.6	96.6	110.0	112.9	44.6	2.0	774.0
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.1	0.0	1.0
1997											
PYAR	59.1	16.6	90.9	137.1	120.3	102.6	123.4	127.4	52.0	4.1	833.4
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.2	0.0	1.4
1998											
PYAR	63.8	11.6	87.7	143.0	131.0	102.8	140.0	136.6	59.7	10.9	887.0
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.2	0.1	1.4
1984-1998											
PYAR	5,000.7										
Observed CRC	1										
Expected CRC	7.2										
SIR	0.1										
95% CI	0.003-0.6										



Table 14E. PYAR Matrix, "Other" Surgeries, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	1.1E-04	2.2E-04	8.2E-04	2.2E-03	3.6E-03	5.5E-03	5.3E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.8E-05	2.6E-04	9.5E-04	2.5E-03	4.0E-03	5.4E-03	2.3E-03	4.4E-02	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	3.8E-04	9.6E-04	1.9E-03	4.3E-03	4.8E-03	6.2E-03	0.0E+00	6.2E-03
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	2.3E-04	6.9E-04	2.2E-03	3.8E-03	4.7E-03	5.5E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.5E-05	1.7E-04	8.6E-04	2.2E-03	3.0E-03	5.3E-03	7.3E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	7.0	1.6	2.8	4.7	4.0	14.6	9.5	4.1	0.0	0.0	48.3
CRC Rate	0.0E+00	2.0E-05	6.5E-05	1.4E-04	9.6E-04	2.5E-03	3.9E-03	5.8E-03	6.5E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	37.9	5.9	14.9	20.6	20.0	41.1	28.3	20.5	1.9	0.0	191.0
CRC Rate	0.0E+00	2.1E-05	0.0E+00	3.5E-04	7.2E-04	1.9E-03	3.9E-03	6.3E-03	6.3E-03	0.0E+00	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1991											
PYAR	82.5	8.2	32.2	36.9	36.7	57.4	47.8	33.9	4.9	0.0	340.5
CRC Rate	0.0E+00	1.1E-05	4.2E-05	2.5E-04	7.2E-04	2.4E-03	3.8E-03	5.6E-03	6.9E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1992											
PYAR	115.4	10.4	43.8	46.6	50.0	70.4	71.6	44.4	12.4	0.0	465.0
CRC Rate	0.0E+00	3.4E-05	4.2E-05	2.5E-04	9.0E-04	2.4E-03	3.3E-03	5.7E-03	6.4E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.1	0.0	0.8
1993											
PYAR	142.7	13.7	52.9	62.0	63.4	82.2	92.8	62.8	19.2	0.4	591.9
CRC Rate	0.0E+00	2.3E-05	2.1E-05	2.4E-04	8.6E-04	2.4E-03	3.7E-03	5.6E-03	7.7E-03	0.0E+00	6.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.1	0.0	1.1
1994											
PYAR	173.2	13.3	64.5	73.7	78.7	91.3	118.1	75.1	24.8	1.0	713.7
CRC Rate	0.0E+00	2.4E-05	4.2E-05	1.9E-04	8.2E-04	2.1E-03	4.3E-03	5.3E-03	3.3E-03	0.0E+00	6.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.4	0.1	0.0	1.3
1995											
PYAR	207.4	12.1	69.4	89.9	101.5	100.5	138.1	97.2	32.5	1.5	850.0
CRC Rate	0.0E+00	0.0E+00	7.3E-05	1.6E-04	8.4E-04	2.1E-03	3.8E-03	5.2E-03	5.2E-03	0.0E+00	6.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.2	0.0	1.5
1996											
PYAR	238.8	10.0	71.8	100.9	111.4	118.1	158.8	108.4	40.1	2.5	960.7
CRC Rate	0.0E+00	2.5E-05	9.5E-05	2.8E-04	7.8E-04	2.4E-03	3.6E-03	3.7E-03	4.5E-03	0.0E+00	6.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.4	0.2	0.0	1.6
1997											
PYAR	263.5	8.6	78.0	104.9	114.5	135.1	172.4	119.3	47.6	3.8	1,047.6
CRC Rate	0.0E+00	0.0E+00	9.7E-05	3.2E-04	8.5E-04	2.2E-03	4.0E-03	4.7E-03	4.5E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.7	0.6	0.2	0.0	1.9
1998											
PYAR	283.9	6.0	78.8	112.8	124.7	145.4	177.6	135.3	61.6	4.2	1,130.2
CRC Rate	0.0E+00	1.3E-05	7.8E-05	2.4E-04	1.0E-03	2.9E-03	4.2E-03	5.6E-03	6.7E-03	0.0E+00	7.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.7	0.8	0.4	0.0	2.5
1984-1998											
PYAR	6,338.8										
Observed CRC	4										
Expected CRC	11.7										
SIR	0.3										
95% CI	0.1-0.8										

Table 15E. PYAR Matrix, "Other" Surgeries, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	7.4E-05	2.0E-04	8.6E-04	1.2E-03	2.5E-03	4.4E-03	5.2E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	7.1E-05	3.4E-04	6.5E-04	1.6E-03	3.3E-03	4.5E-03	3.3E-03	0.0E+00	5.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.9E-06	3.5E-05	1.7E-04	8.4E-04	1.5E-03	2.8E-03	3.2E-03	3.6E-03	0.0E+00	5.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.1E-06	0.0E+00	2.3E-05	1.5E-04	4.9E-04	1.5E-03	2.9E-03	4.1E-03	5.1E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.4E-05	1.9E-04	5.9E-04	1.6E-03	3.1E-03	4.6E-03	5.2E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	3.2E-05	4.4E-05	2.9E-04	7.0E-04	1.6E-03	2.4E-03	3.7E-03	4.8E-03	0.0E+00	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.2E-04	6.8E-04	1.4E-03	2.2E-03	3.5E-03	3.8E-03	7.7E-03	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.2E-05	9.7E-05	2.1E-04	9.6E-04	1.5E-03	2.3E-03	3.6E-03	3.3E-03	6.4E-03	5.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	5.3E-05	2.4E-04	7.5E-04	1.7E-03	2.6E-03	3.8E-03	2.7E-03	0.0E+00	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.2E-06	0.0E+00	4.2E-05	3.0E-04	5.8E-04	1.3E-03	2.6E-03	3.5E-03	5.3E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	1.1	0.0	2.6	4.1	2.9	6.8	8.8	4.8	2.7	0.0	33.8
CRC Rate	0.0E+00	3.7E-05	3.2E-05	1.4E-04	5.3E-04	1.1E-03	2.7E-03	3.1E-03	3.8E-03	0.0E+00	4.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1995											
PYAR	8.1	0.0	6.3	14.2	11.0	26.8	30.3	23.7	11.8	0.8	133.1
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.1E-04	6.5E-04	1.2E-03	2.7E-03	3.9E-03	3.4E-03	0.0E+00	5.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1996											
PYAR	16.4	1.0	13.7	29.1	20.3	40.9	52.4	38.5	18.3	1.0	231.6
CRC Rate	0.0E+00	1.3E-05	3.2E-05	2.4E-04	5.6E-04	1.4E-03	2.7E-03	3.1E-03	2.8E-03	0.0E+00	5.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.4
1997											
PYAR	21.9	2.0	23.3	52.7	43.6	50.5	66.3	56.7	25.2	3.5	345.6
CRC Rate	0.0E+00	0.0E+00	3.3E-05	1.4E-04	7.6E-04	1.6E-03	2.5E-03	4.1E-03	4.4E-03	6.1E-03	5.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1998											
PYAR	26.8	1.1	41.0	84.9	69.6	57.6	85.3	70.8	32.5	8.5	478.2
CRC Rate	0.0E+00	1.3E-05	3.4E-05	2.6E-04	6.1E-04	1.2E-03	3.1E-03	3.0E-03	3.8E-03	6.4E-03	5.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.8
1984-1998											
PYAR	1,222.3										
Observed CRC	0										
Expected CRC	2.1										
SIR	0.0										
95% CI	-										





Table 2F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Males, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	1.7	3.3	2.3	2.8	1.1	0.7	0.0	11.8
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.4	0.2	6.7	7.4	12.7	9.2	3.4	1.1	0.0	41.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.4	2.3	8.4	13.8	21.5	12.3	5.0	2.0	0.0	65.6
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.2	2.1	4.1	11.9	17.2	35.2	18.0	5.4	2.0	0.0	96.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	1.0	2.3	4.6	15.5	18.8	39.6	24.3	10.5	2.0	0.0	118.5
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1989											
PYAR	1.0	2.9	5.9	15.7	25.3	39.7	33.7	13.0	2.0	0.0	139.1
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	1.0	4.0	5.7	16.0	30.0	46.0	40.4	17.4	1.0	0.0	161.5
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1991											
PYAR	1.0	3.5	7.1	16.0	31.4	49.7	40.9	24.4	1.0	0.0	174.8
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1992											
PYAR	0.1	3.9	9.8	15.3	34.5	54.1	47.7	29.2	1.5	0.0	196.0
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2
1993											
PYAR	0.0	4.0	8.6	14.3	38.5	53.6	54.6	32.3	3.4	0.0	209.2
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1994											
PYAR	1.2	3.6	10.7	12.8	42.0	49.7	66.1	34.5	5.2	0.9	226.7
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1995											
PYAR	2.0	2.4	10.7	15.7	39.1	53.1	73.4	37.1	7.8	1.0	242.2
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1996											
PYAR	2.0	2.0	10.4	16.9	38.0	57.6	80.9	40.6	10.4	1.0	259.9
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1997											
PYAR	2.6	1.0	12.4	16.9	36.7	59.1	85.1	45.5	12.8	1.0	273.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1998											
PYAR	4.0	1.0	11.0	18.6	37.1	57.7	85.7	51.0	16.9	1.0	283.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1984-1998											
PYAR	2,499.2										
Observed CRC	5										
Expected CRC	2.1										
SIR	2.4										
95% CI	0.8-5.6										

Table 3F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.7	1.5	2.0	4.1	2.2	0.8	0.1	0.0	11.4
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	2.3	5.1	5.0	11.5	7.2	2.3	1.0	0.0	34.4
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	1.0	0.4	3.7	7.6	8.4	14.8	17.7	4.1	1.0	0.0	58.6
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.3	1.8	3.8	10.0	12.8	17.3	25.0	8.9	1.3	0.0	81.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1989											
PYAR	0.0	1.2	4.5	15.5	14.8	19.7	33.7	10.2	3.8	0.0	103.3
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	0.0	1.0	5.2	15.1	19.1	25.3	42.2	13.6	4.2	0.0	125.6
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	1.0	7.0	15.5	21.9	28.1	45.5	19.9	5.0	0.0	143.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	1.8	6.4	16.2	21.9	33.6	48.0	25.7	6.9	0.1	160.4
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1993											
PYAR	0.0	2.0	5.8	15.7	22.1	34.3	54.7	32.5	6.3	1.0	174.4
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
1994											
PYAR	0.0	2.0	4.3	12.7	28.4	35.3	57.6	37.3	7.7	1.4	186.7
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1995											
PYAR	0.2	1.5	3.8	12.6	30.6	32.0	58.7	41.7	10.4	2.5	193.9
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1996											
PYAR	1.0	1.0	4.3	13.9	30.0	30.9	60.5	50.2	13.2	3.0	208.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1997											
PYAR	1.0	1.0	4.3	13.2	28.6	35.8	59.5	57.8	17.5	3.0	221.7
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1998											
PYAR	1.0	0.3	5.5	13.1	29.5	40.1	53.5	66.3	19.2	4.1	232.3
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1984-1998											
PYAR	1,935.4										
Observed CRC	1										
Expected CRC	1.6										
SIR	0.6										
95% CI	0.02-3.3										







Table 6F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	1.2	1.5	3.2	2.4	2.9	0.7	0.0	11.8
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.4	1.7	8.4	12.0	10.8	6.7	1.0	0.0	40.9
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.3	1.0	3.4	12.7	18.7	16.9	10.7	1.0	0.0	64.6
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	1.0	2.5	6.5	16.0	28.5	23.2	15.7	1.5	0.0	94.9
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1993											
PYAR	0.0	2.0	3.9	6.7	18.9	33.5	29.6	19.4	2.6	0.0	116.5
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1994											
PYAR	0.0	2.0	5.9	5.1	23.8	35.6	38.2	22.1	3.5	0.9	137.1
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1995											
PYAR	0.0	2.3	6.6	7.0	26.4	36.0	47.0	25.9	7.5	1.0	159.8
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1996											
PYAR	0.0	2.0	6.6	8.8	26.0	34.5	53.2	30.5	10.4	1.0	173.1
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	1.0	7.2	10.2	25.5	35.4	59.8	37.5	12.4	1.0	189.9
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1998											
PYAR	0.0	1.0	5.7	11.2	27.6	39.0	60.5	43.8	16.0	1.0	205.7
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2

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1984-1998	
PYAR	1,194.4
Observed CRC	0
Expected CRC	1.1
SIR	0.0
95% CI	-

Table 7F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	1.0	1.2	2.4	4.1	1.5	0.8	0.1	11.1
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.0	2.7	4.7	5.6	11.3	5.6	2.3	1.0	33.2
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996											
PYAR	0.0	1.0	0.4	4.5	8.1	7.8	16.3	14.2	3.4	1.0	56.7
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	1.0	1.0	4.2	11.0	11.3	17.6	24.3	6.3	1.2	77.9
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1998											
PYAR	0.0	0.3	2.1	4.2	15.1	15.6	19.6	32.0	9.6	2.9	101.3
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1984-1998											
PYAR	280.1										
Observed CRC	0										
Expected CRC	0.3										
SIR	0.0										
95% CI	-										

Table 8F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Males, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.4E-05	1.3E-04	1.2E-04	5.6E-04	9.9E-04	1.8E-03	2.3E-03	0.0E+00	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.2E-05	8.8E-05	1.2E-04	5.5E-04	1.0E-03	1.7E-03	0.0E+00	2.2E-02	1.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	8.5E-05	2.6E-04	5.1E-04	1.4E-03	1.2E-03	3.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.5E-05	2.0E-04	4.8E-04	1.1E-03	2.0E-03	2.3E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	3.1E-05	2.1E-04	5.7E-04	1.0E-03	2.1E-03	2.4E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.0E-05	1.1E-05	3.0E-05	3.1E-04	6.9E-04	1.1E-03	2.3E-03	2.4E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	0.0E+00	1.2E-04	3.1E-04	5.5E-04	1.3E-03	2.6E-03	7.9E-04	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	1.1E-05	7.0E-05	1.6E-04	4.9E-04	1.1E-03	2.1E-03	1.5E-03	0.0E+00	1.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	3.1E-05	8.2E-05	1.8E-04	5.8E-04	9.8E-04	2.3E-03	7.1E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	0.0E+00	6.7E-05	1.4E-04	6.5E-04	1.1E-03	1.9E-03	2.1E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	0.0	1.7	3.3	2.3	2.8	1.1	0.65	11.83
CRC Rate	0.0E+00	1.2E-05	2.1E-05	6.5E-05	2.4E-04	4.0E-04	1.4E-03	2.0E-03	1.3E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.4	0.2	6.7	7.4	12.7	9.2	3.4	1	40.9
CRC Rate	0.0E+00	0.0E+00	5.2E-05	3.8E-05	2.3E-04	5.9E-04	1.5E-03	1.8E-03	1.9E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996											
PYAR	0.0	0.0	0.4	2.3	8.4	13.8	21.4	12.3	5.0	1	64.65
CRC Rate	0.0E+00	0.0E+00	3.2E-05	7.3E-05	1.9E-04	8.1E-04	9.2E-04	1.4E-03	1.9E-03	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	0.2	2.1	4.1	11.9	17.2	33.8	17.2	5.4	1	92.86
CRC Rate	0.0E+00	0.0E+00	3.2E-05	8.4E-05	2.1E-04	6.4E-04	1.1E-03	8.6E-04	2.6E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1998											
PYAR	0.0	1.0	2.3	4.6	15.5	18.7	38.5	23.3	10.5	1	115.24
CRC Rate	0.0E+00	0.0E+00	3.3E-05	3.6E-05	2.2E-04	7.4E-04	1.5E-03	2.3E-03	6.1E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1

1984-1998

PYAR	325.5
Observed CRC	0
Expected CRC	0.3
SIR	0.0
95% CI	-

Table 9F. PYAR Matrix for Distal Colorectal Cancer by Gastrectomy, Females, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	1.0	1.2	2.4	4.1	1.8	0.8	0.1	0.0	11.4
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	2.7	4.7	5.6	11.6	6.6	2.3	1.0	0.0	34.4
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	1.0	0.4	4.5	8.1	7.8	17.2	15.2	3.5	1.0	0.0	58.7
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	1.0	1.0	4.2	11.0	11.2	18.6	25.3	7.3	1.1	0.0	80.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	0.3	2.1	4.2	15.2	15.6	20.7	33.1	10.6	2.9	0.0	104.5
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1989											
PYAR	0.0	1.2	6.0	15.8	19.8	25.0	42.2	11.9	4.2	0.0	126.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	0.0	1.0	7.0	17.2	21.6	28.7	47.4	16.5	5.0	0.0	144.5
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	1.8	7.0	17.5	23.0	31.8	50.2	23.7	5.0	0.0	160.0
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	2.0	6.4	17.5	23.9	35.9	54.8	27.4	6.9	0.1	174.8
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1993											
PYAR	0.0	2.0	5.8	17.6	24.2	37.4	59.2	33.3	6.3	1.0	186.7
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1994											
PYAR	0.2	2.0	4.3	14.0	29.3	37.4	59.0	39.3	7.7	1.4	194.6
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1995											
PYAR	1.0	1.5	4.4	14.1	31.5	34.5	63.1	44.8	10.4	2.5	207.8
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1996											
PYAR	1.0	1.0	5.0	14.5	31.9	34.6	65.7	52.3	13.2	3.0	222.2
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1997											
PYAR	1.0	1.0	5.0	13.4	31.5	40.6	60.6	58.8	17.5	3.0	232.3
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1998											
PYAR	2.5	0.3	6.1	14.0	30.7	42.7	56.3	68.6	19.2	4.1	244.5
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1984-1998											
PYAR	2,183.0										
Observed CRC	1										
Expected CRC	2.1										
SIR	0.5										
95% CI	0.01-2.8										



Table 11F. PYAR Matrix for Distal Colorectal Cancer by Gastrectomy, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.7	1.5	2.0	4.1	2.2	0.8	0.1	0.0	11.4
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	2.3	5.1	5.0	11.5	7.2	2.3	1.0	0.0	34.4
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	1.0	0.4	3.7	7.6	8.4	14.8	17.7	4.1	1.0	0.0	58.6
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	0.3	1.8	3.8	10.0	12.8	17.3	25.0	8.9	1.3	0.0	81.0
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1989											
PYAR	0.0	1.2	4.5	15.5	14.8	19.7	33.7	10.2	3.8	0.0	103.3
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	0.0	1.0	5.2	15.1	19.1	25.3	42.2	13.6	4.2	0.0	125.6
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	1.0	7.0	15.5	21.9	28.1	45.5	19.9	5.0	0.0	143.8
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	1.8	6.4	16.2	21.9	33.6	48.0	25.7	6.9	0.1	160.4
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1993											
PYAR	0.0	2.0	5.8	15.7	22.1	34.3	54.7	32.5	6.3	1.0	174.4
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1994											
PYAR	0.0	2.0	4.3	12.7	28.4	35.3	57.6	37.3	7.7	1.4	186.7
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1995											
PYAR	0.2	1.5	3.8	12.6	30.6	32.0	58.7	41.7	10.4	2.5	193.9
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1996											
PYAR	1.0	1.0	4.3	13.9	30.0	30.9	60.5	50.2	13.2	3.0	208.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1997											
PYAR	1.0	1.0	4.3	13.2	28.6	35.8	59.5	57.8	17.5	3.0	221.7
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1998											
PYAR	1.0	0.3	5.5	13.1	29.5	40.1	53.5	66.3	19.2	4.1	232.3
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1984-1998											
PYAR	1,935.4										
Observed CRC	1										
Expected CRC	1.8										
SIR	0.5										
95% CI	0.01-2.8										

Table 12F. PYAR Matrix for Distal Colorectal Cancer by Gastrectomy, Males, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	1.7	2.1	2.8	2.9	1.6	0.7	0.0	11.8
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.6	5.5	8.0	13.0	8.2	4.7	1.1	0.0	41.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	0.0	0.3	2.0	7.7	12.2	23.3	13.0	5.2	2.0	0.0	65.6
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	6.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	0.2	1.8	2.7	13.3	15.6	33.5	19.2	7.6	2.0	0.0	95.9
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1989											
PYAR	1.0	2.0	4.7	13.2	19.6	34.1	29.3	12.3	2.0	0.0	118.2
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1990											
PYAR	1.0	2.9	5.0	11.9	27.0	40.0	34.9	14.3	1.0	0.0	138.1
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1991											
PYAR	1.0	2.9	6.7	14.1	29.3	46.1	37.4	22.7	1.0	0.0	161.3
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1992											
PYAR	0.1	3.4	7.9	13.2	31.8	48.7	42.0	26.7	1.5	0.0	175.3
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1993											
PYAR	0.0	4.0	6.8	13.9	34.0	50.6	49.7	30.7	3.4	0.0	193.1
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1994											
PYAR	0.0	3.6	7.8	11.9	38.0	47.8	61.0	32.6	5.2	0.9	208.7
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.3
1995											
PYAR	1.2	2.4	10.5	13.0	37.6	48.3	68.0	36.8	7.8	1.0	226.5
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1996											
PYAR	2.0	2.0	10.1	15.7	33.7	53.2	73.8	39.0	10.4	1.0	240.9
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.4
1997											
PYAR	2.0	1.0	10.5	15.9	35.1	53.9	81.7	44.6	12.8	1.0	258.3
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.5
1998											
PYAR	2.6	1.0	9.7	16.5	35.6	56.6	82.1	50.5	16.9	1.0	272.4
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1984-1998											
PYAR	2,207.2										
Observed CRC	5										
Expected CRC	3.7										
SIR	1.4										
95% CI	0.5-3.3										





Table 14F. PYAR Matrix for Distal Colorectal Cancer by Gastrectomy, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	1.2	1.5	3.2	2.4	2.9	0.7	0.0	11.8
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.4	1.7	8.4	12.0	10.8	6.7	1.0	0.0	40.9
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	0.0	0.3	1.0	3.4	12.7	18.7	16.9	10.7	1.0	0.0	64.6
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1992											
PYAR	0.0	1.0	2.5	6.5	16.0	28.5	23.2	15.7	1.5	0.0	94.9
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1993											
PYAR	0.0	2.0	3.9	6.7	18.9	33.5	29.6	19.4	2.6	0.0	116.5
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1994											
PYAR	0.0	2.0	5.9	5.1	23.8	35.6	38.2	22.1	3.5	0.9	137.1
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1995											
PYAR	0.0	2.3	6.6	7.0	26.4	36.0	47.0	25.9	7.5	1.0	159.8
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1996											
PYAR	0.0	2.0	6.6	8.8	26.0	34.5	53.2	30.5	10.4	1.0	173.1
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1997											
PYAR	0.0	1.0	7.2	10.2	25.5	35.4	59.8	37.5	12.4	1.0	189.9
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.3
1998											
PYAR	0.0	1.0	5.7	11.2	27.6	39.0	60.5	43.8	16.0	1.0	205.7
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.5
1984-1998											
PYAR	1,194.4										
Observed CRC	1										
Expected CRC	2.2										
SIR	0.5										
95% CI	0.01-2.8										

Table 15F. PYAR Matrix for Distal Colorectal Cancer by Gastrectomy, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	1.0	1.2	2.4	4.1	1.5	0.8	0.1	11.1
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.0	2.7	4.7	5.6	11.3	5.6	2.3	1.0	33.2
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996											
PYAR	0.0	1.0	0.4	4.5	8.1	7.8	16.3	14.2	3.4	1.0	56.7
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	1.0	1.0	4.2	11.0	11.3	17.6	24.3	6.3	1.2	77.9
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1998											
PYAR	0.0	0.3	2.1	4.2	15.1	15.6	19.6	32.0	9.6	2.9	101.3
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1984-1998											
PYAR	280.1										
Observed CRC	0										
Expected CRC	0.3										
SIR	0.0										
95% CI	-										

Table 16F. PYAR Matrix for Proximal Colorectal Cancer by Gastrectomy, Males, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	0.0	0.0	0.0	0.0	1.7	3.3	2.3	2.8	1.1	0.7	11.8
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	0.0	0.0	0.4	0.2	6.7	7.4	12.7	9.2	3.4	1.0	40.9
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1996											
PYAR	0.0	0.0	0.4	2.3	8.4	13.8	21.4	12.3	5.0	1.0	64.7
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1997											
PYAR	0.0	0.2	2.1	4.1	11.9	17.2	33.8	17.2	5.4	1.0	92.9
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1998											
PYAR	0.0	1.0	2.3	4.6	15.5	18.7	38.5	23.3	10.5	1.0	115.2
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.3
1984-1998											
PYAR	325.5										
Observed CRC	1										
Expected CRC	0.7										
SIR	1.5										
95% CI	0.4-8.3										

Table 17F. PYAR Matrix for Proximal Colorectal Cancer by "Other" Surgeries, Females, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	1.1	2.6	4.1	2.9	6.8	8.8	4.8	2.7	0.0	0.0	33.8
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	8.1	6.3	14.2	11.0	26.8	30.3	24.1	11.8	0.8	0.0	133.5
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	17.4	13.7	29.0	20.2	40.7	52.2	39.9	18.3	1.0	0.0	232.4
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	23.9	23.3	52.6	43.6	50.5	66.3	59.5	25.2	3.4	0.0	348.2
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1988											
PYAR	27.9	41.1	85.0	69.8	57.8	85.6	74.0	32.6	8.5	0.0	482.3
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1989											
PYAR	36.2	51.4	101.2	92.9	64.9	99.3	81.9	47.8	12.1	0.5	588.0
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1990											
PYAR	49.6	63.6	111.7	112.9	77.3	108.0	90.8	65.4	16.8	1.0	697.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1991											
PYAR	55.2	61.2	121.2	127.3	86.4	119.5	101.4	78.5	23.1	1.0	774.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1992											
PYAR	61.7	51.5	126.5	133.7	100.8	118.9	125.6	91.8	25.2	1.0	836.6
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.4
1993											
PYAR	65.4	44.7	127.8	142.4	107.4	123.3	138.8	108.8	28.6	1.0	888.0
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.5
1994											
PYAR	71.4	38.8	120.2	151.8	112.5	128.0	140.6	127.3	34.2	1.0	925.6
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.4
1995											
PYAR	75.8	32.3	109.8	157.5	124.3	131.5	146.5	148.4	41.8	1.3	969.2
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.5
1996											
PYAR	79.4	27.6	104.6	161.3	135.7	134.3	159.9	160.7	49.6	2.0	1,015.1
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1997											
PYAR	83.3	21.6	102.0	162.9	147.8	136.9	168.8	172.6	55.5	4.1	1,055.5
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.7
1998											
PYAR	85.5	15.6	94.4	163.1	155.0	134.1	184.3	175.2	61.7	10.9	1,079.8
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.8
1984-1998											
PYAR	10,059.7										
Observed CRC	7										
Expected CRC	5.5										
SIR	1.3										
95% CI	0.5-2.7										



Table 19F. PYAR Matrix for Proximal Colorectal Cancer by "Other" Surgeries, Females, One Year of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	6.1E-05	3.7E-05	3.3E-04	3.8E-04	8.3E-04	1.8E-03	3.8E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	1.1	2.2	4.5	2.6	7.0	8.5	5.3	2.7	0.0	0.0	33.8
CRC Rate	0.0E+00	0.0E+00	2.4E-05	7.2E-05	1.2E-04	4.8E-04	1.2E-03	1.7E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	8.1	4.8	14.5	9.9	24.8	32.7	24.8	13.1	0.8	0.0	133.5
CRC Rate	0.0E+00	0.0E+00	0.0E+00	5.2E-05	2.8E-04	5.0E-04	9.9E-04	1.2E-03	9.8E-04	0.0E+00	1.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987											
PYAR	16.9	11.8	28.7	22.5	37.5	51.4	42.5	18.7	2.4	0.0	232.4
CRC Rate	0.0E+00	0.0E+00	1.1E-05	5.0E-05	1.8E-04	5.4E-04	1.1E-03	1.7E-03	2.9E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1988											
PYAR	23.0	18.9	54.8	45.7	41.6	72.8	58.3	27.1	7.1	0.0	349.3
CRC Rate	0.0E+00	0.0E+00	1.1E-05	4.7E-05	2.0E-04	6.0E-04	8.8E-04	2.1E-03	2.1E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1989											
PYAR	27.8	33.3	83.3	73.4	54.3	88.9	71.5	38.6	9.8	0.5	481.1
CRC Rate	0.0E+00	2.1E-05	2.2E-05	7.6E-05	2.0E-04	5.2E-04	1.2E-03	1.5E-03	2.4E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1990											
PYAR	35.6	46.1	98.4	95.4	65.2	98.0	78.9	52.9	16.6	1.0	588.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	2.9E-05	2.9E-04	4.2E-04	8.5E-04	1.5E-03	1.2E-03	0.0E+00	1.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1991											
PYAR	47.7	55.0	111.9	112.9	79.6	105.2	89.4	71.2	22.1	1.0	695.9
CRC Rate	0.0E+00	0.0E+00	2.2E-05	5.7E-05	3.1E-04	4.5E-04	1.1E-03	1.8E-03	1.9E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1992											
PYAR	54.4	50.7	121.5	127.0	91.0	108.8	109.0	86.5	25.2	1.0	775.1
CRC Rate	0.0E+00	0.0E+00	1.1E-05	6.9E-05	2.8E-04	5.6E-04	1.0E-03	1.9E-03	5.4E-04	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.4
1993											
PYAR	60.3	43.4	122.3	136.4	100.6	114.9	127.2	100.6	27.6	1.0	834.4
CRC Rate	6.2E-06	0.0E+00	1.1E-05	2.7E-05	2.2E-04	4.6E-04	1.0E-03	1.8E-03	1.6E-03	0.0E+00	2.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.4
1994											
PYAR	65.2	36.5	118.9	146.7	109.1	121.3	134.3	120.9	34.1	1.0	888.0
CRC Rate	0.0E+00	1.2E-05	1.1E-05	5.2E-05	1.8E-04	4.3E-04	1.1E-03	1.2E-03	1.3E-03	0.0E+00	1.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1995											
PYAR	69.8	32.3	108.2	152.8	118.1	126.6	134.9	139.5	41.8	1.3	925.2
CRC Rate	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.7E-04	4.4E-04	1.1E-03	1.5E-03	1.2E-03	0.0E+00	2.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.5
1996											
PYAR	75.6	26.1	101.5	156.5	131.0	126.0	147.4	155.7	49.6	2.0	971.3
CRC Rate	0.0E+00	0.0E+00	2.1E-05	9.8E-05	1.5E-04	4.9E-04	1.2E-03	1.4E-03	1.6E-03	0.0E+00	2.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.6
1997											
PYAR	79.2	21.1	99.2	156.8	142.7	129.4	158.1	166.2	55.5	4.1	1,012.3
CRC Rate	0.0E+00	0.0E+00	1.1E-05	3.6E-05	3.2E-04	5.6E-04	1.1E-03	1.9E-03	1.2E-03	6.1E-03	2.4E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.7
1998											
PYAR	83.3	15.6	94.2	160.1	152.8	130.0	175.5	171.0	61.3	10.9	1,054.7
CRC Rate	0.0E+00	0.0E+00	0.0E+00	7.1E-05	1.9E-04	4.5E-04	1.5E-03	1.6E-03	2.0E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.8
1984-1998											
PYAR	8,975.1										
Observed CRC	2										
Expected CRC	5.0										
SIR	0.4										
95% CI	0.05-1.4										













Table 25F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Females, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	1.1	2.6	4.1	2.9	6.8	8.8	4.8	2.7	0.0	0.0	33.8
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	8.1	6.3	14.2	11.0	26.8	30.3	24.1	11.8	0.8	0.0	133.5
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986											
PYAR	17.4	13.7	29.0	20.2	40.7	52.2	39.9	18.3	1.0	0.0	232.4
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1987											
PYAR	23.9	23.3	52.6	43.6	50.5	66.3	59.5	25.2	3.4	0.0	348.2
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1988											
PYAR	27.9	41.1	85.0	69.8	57.8	85.6	74.0	32.6	8.5	0.0	482.3
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1989											
PYAR	36.2	51.4	101.2	92.9	64.9	99.3	81.9	47.8	12.1	0.5	588.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1990											
PYAR	49.6	63.6	111.7	112.9	77.3	108.0	90.8	65.4	16.8	1.0	697.0
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1991											
PYAR	55.2	61.2	121.2	127.3	86.4	119.5	101.4	78.5	23.1	1.0	774.8
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1992											
PYAR	61.7	51.5	126.5	133.7	100.8	118.9	125.6	91.8	25.2	1.0	836.6
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.5
1993											
PYAR	65.4	44.7	127.8	142.4	107.4	123.3	138.8	108.8	28.6	1.0	888.0
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1994											
PYAR	71.4	38.8	120.2	151.8	112.5	128.0	140.6	127.3	34.2	1.0	925.6
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1995											
PYAR	75.8	32.3	109.8	157.5	124.3	131.5	146.5	148.4	41.8	1.3	969.2
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.6
1996											
PYAR	79.4	27.6	104.6	161.3	135.7	134.3	159.9	160.7	49.6	2.0	1,015.1
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	0.0	0.8
1997											
PYAR	83.3	21.6	102.0	162.9	147.8	136.9	168.8	172.6	55.5	4.1	1,055.5
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0	0.7
1998											
PYAR	85.5	15.6	94.4	163.1	155.0	134.1	184.3	175.2	61.7	10.9	1,079.8
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	0.0	0.8
1984-1998											
PYAR	10,059.7										
Observed CRC	4										
Expected CRC	6.4										
SIR	0.6										
95% CI	0.2-1.5										

Table 26F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Males, Zero Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	7.7	2.8	3.1	3.1	10.6	12.8	6.9	1.2	0.0	0.0	48.3
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	39.3	12.5	16.0	18.9	31.1	37.6	28.0	8.5	0.0	0.0	191.9
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1986											
PYAR	83.4	25.0	31.7	39.1	43.0	58.6	42.4	18.2	0.2	0.0	341.5
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1987											
PYAR	115.1	33.2	42.7	50.0	55.8	78.9	58.7	28.4	2.4	0.0	465.2
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.3
1988											
PYAR	143.8	38.1	58.8	62.4	74.4	93.9	78.9	42.7	4.0	0.0	597.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.5
1989											
PYAR	174.6	40.1	72.4	80.3	79.5	116.1	96.3	54.9	5.0	0.0	719.1
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.0	0.7
1990											
PYAR	209.0	38.5	83.8	102.5	94.6	134.7	116.1	69.5	7.0	0.0	855.7
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.0	0.8
1991											
PYAR	240.0	33.5	91.8	116.7	106.3	149.0	135.1	77.9	11.8	0.0	962.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.1	0.0	1.0
1992											
PYAR	265.1	36.7	96.5	119.0	120.0	156.1	157.8	88.5	17.4	0.0	1,057.1
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.1	0.0	1.0
1993											
PYAR	284.9	32.4	103.8	122.0	126.2	159.4	181.8	102.6	23.4	0.4	1,136.8
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.3	0.1	0.0	1.2
1994											
PYAR	312.9	27.2	106.4	127.3	139.7	170.4	194.0	118.6	30.9	1.0	1,228.4
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.4	0.0	0.0	1.2
1995											
PYAR	338.6	24.0	104.1	127.0	156.0	173.5	208.8	131.5	39.1	1.6	1,304.1
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.1	0.0	1.3
1996											
PYAR	357.3	20.5	102.8	132.8	163.9	187.1	225.1	140.4	44.5	3.5	1,377.8
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.2	0.1	0.0	1.3
1997											
PYAR	379.5	17.0	102.4	132.4	166.9	199.6	233.8	151.2	51.5	4.8	1,438.9
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.5	0.0	0.0	1.5
1998											
PYAR	404.1	14.0	93.7	140.8	166.1	206.6	227.4	166.2	64.5	5.2	1,488.5
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.5	0.4	0.0	2.0
1984-1998											
PYAR	13,212.1										
Observed CRC	4										
Expected CRC	13.3										
SIR	0.3										
95% CI	0.1-0.8										





Table 29F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Females, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	1.1	1.7	3.7	3.1	3.6	10.6	5.7	2.9	1.5	0.0	33.8
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	8.1	2.0	12.8	13.7	9.5	38.9	21.5	19.3	6.9	0.8	133.5
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1991											
PYAR	16.4	4.5	29.2	24.9	19.0	59.8	38.4	28.0	10.9	1.0	232.1
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2
1992											
PYAR	22.9	7.1	44.8	48.6	37.5	67.7	59.4	42.8	15.5	1.0	347.4
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
1993											
PYAR	27.8	12.4	72.0	79.6	54.8	77.4	77.8	55.2	21.3	1.0	479.2
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1994											
PYAR	34.9	19.5	83.2	104.1	71.5	83.0	87.2	71.8	30.0	1.0	586.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1995											
PYAR	44.6	26.0	90.9	119.8	93.5	92.4	94.2	96.0	35.7	1.3	694.3
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1996											
PYAR	52.0	22.0	93.6	132.8	107.6	96.6	110.0	112.9	44.6	2.0	774.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.6
1997											
PYAR	59.1	16.6	90.9	137.1	120.3	102.6	123.4	127.4	52.0	4.1	833.4
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1998											
PYAR	63.8	11.6	87.7	143.0	131.0	102.8	140.0	136.6	59.7	10.9	887.0
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.7
1984-1998											
PYAR	5,000.7										
Observed CRC	1										
Expected CRC	3.3										
SIR	0.3										
95% CI	0.01-1.7										



Table 30F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Males, Five Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	7.0	1.6	2.8	4.7	4.0	14.6	9.5	4.1	0.0	0.0	48.3
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1990											
PYAR	37.9	5.9	14.9	20.6	20.0	41.1	28.3	20.5	1.9	0.0	191.0
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2
1991											
PYAR	82.5	8.2	32.2	36.9	36.7	57.4	47.8	33.9	4.9	0.0	340.5
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1992											
PYAR	115.4	10.4	43.8	46.6	50.0	70.4	71.6	44.4	12.4	0.0	465.0
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.5
1993											
PYAR	142.7	13.7	52.9	62.0	63.4	82.2	92.8	62.8	19.2	0.4	591.9
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.7
1994											
PYAR	173.2	13.3	64.5	73.7	78.7	91.3	118.1	75.1	24.8	1.0	713.7
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.7
1995											
PYAR	207.4	12.1	69.4	89.9	101.5	100.5	138.1	97.2	32.5	1.5	850.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.1	0.0	0.9
1996											
PYAR	238.8	10.0	71.8	100.9	111.4	118.1	158.8	108.4	40.1	2.5	960.7
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.1	0.0	0.9
1997											
PYAR	263.5	8.6	78.0	104.9	114.5	135.1	172.4	119.3	47.6	3.8	1,047.6
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.4	0.0	0.0	1.1
1998											
PYAR	283.9	6.0	78.8	112.8	124.7	145.4	177.6	135.3	61.6	4.2	1,130.2
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.3	0.0	1.6
1984-1998											
PYAR	6,338.8										
Observed CRC	1										
Expected CRC	7.1										
SIR	0.1										
95% CI	0.003-0.7										

Table 31F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Females, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	6.0E-06	2.0E-05	1.2E-05	1.7E-04	3.9E-04	6.6E-04	1.3E-03	2.2E-03	1.0E-03	0.0E+00	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.8E-04	4.8E-04	9.0E-04	1.7E-03	2.4E-03	2.0E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	1.1E-05	8.3E-05	2.6E-04	8.2E-04	1.4E-03	1.7E-03	9.5E-04	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.3E-04	3.7E-04	7.0E-04	1.8E-03	1.6E-03	2.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	2.2E-05	2.0E-04	4.7E-04	9.8E-04	1.2E-03	1.9E-03	1.5E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.2E-05	8.8E-05	3.7E-04	8.9E-04	1.1E-03	1.5E-03	1.7E-03	7.7E-03	2.6E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.2E-05	5.4E-05	1.3E-04	5.7E-04	8.4E-04	1.2E-03	1.4E-03	1.1E-03	6.4E-03	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	4.3E-05	1.4E-04	3.9E-04	9.1E-04	1.2E-03	1.5E-03	1.3E-03	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.2E-05	2.6E-04	3.0E-04	8.0E-04	1.1E-03	1.2E-03	2.4E-03	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.4E-05	2.1E-05	9.1E-05	2.9E-04	6.0E-04	1.4E-03	1.4E-03	1.3E-03	0.0E+00	2.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	1.1	0.0	2.6	4.1	2.9	6.8	8.8	4.8	2.7	0.0	33.8
CRC Rate	0.0E+00	0.0E+00	3.2E-05	1.0E-04	4.4E-04	7.2E-04	1.4E-03	1.9E-03	1.2E-03	0.0E+00	2.9E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995											
PYAR	8.1	0.0	6.3	14.2	11.0	26.8	30.3	23.7	11.8	0.8	133.1
CRC Rate	0.0E+00	0.0E+00	1.1E-05	1.3E-04	3.9E-04	9.1E-04	1.3E-03	1.2E-03	6.9E-04	0.0E+00	2.7E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1996											
PYAR	16.4	1.0	13.7	29.1	20.3	40.9	52.4	38.5	18.3	1.0	231.6
CRC Rate	0.0E+00	0.0E+00	2.2E-05	1.1E-04	4.2E-04	9.4E-04	1.3E-03	1.6E-03	1.6E-03	0.0E+00	3.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1997											
PYAR	21.9	2.0	23.3	52.7	43.6	50.5	66.3	56.7	25.2	3.5	345.6
CRC Rate	0.0E+00	1.3E-05	3.4E-05	1.7E-04	4.1E-04	6.8E-04	1.4E-03	1.2E-03	8.9E-04	0.0E+00	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1998											
PYAR	26.8	1.1	41.0	84.9	69.6	57.6	85.3	70.8	32.5	8.5	478.2
CRC Rate	4.1E-07	6.7E-06	2.7E-05	1.4E-04	4.0E-04	8.2E-04	1.3E-03	1.6E-03	1.5E-03	9.7E-04	2.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.4
1984-1998											
PYAR	1,222.3										
Observed CRC	0										
Expected CRC	1.0										
SIR	0.0										
95% CI	-										

Table 32F. PYAR Matrix for Distal Colorectal Cancer by "Other" Surgeries, Males, Ten Years of Induction, 1984-1998

	Age Group										Total
	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+	
1984											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	9.7E-06	4.8E-05	5.4E-05	6.2E-04	1.4E-03	2.3E-03	2.8E-03	3.0E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.5E-05	1.4E-04	7.5E-04	1.8E-03	2.6E-03	3.2E-03	1.6E-03	2.2E-02	4.1E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.3E-05	2.4E-04	6.1E-04	1.2E-03	2.5E-03	2.9E-03	3.1E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.0E-05	1.1E-05	1.6E-04	4.3E-04	1.4E-03	2.3E-03	2.1E-03	2.3E-03	0.0E+00	3.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	3.3E-05	9.3E-05	5.1E-04	1.5E-03	1.6E-03	3.2E-03	3.3E-03	0.0E+00	3.2E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.0E-05	5.4E-05	1.1E-04	6.4E-04	1.7E-03	2.5E-03	3.1E-03	3.2E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	1.1E-05	0.0E+00	2.0E-04	3.7E-04	1.3E-03	2.4E-03	3.1E-03	4.7E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.8E-04	5.1E-04	1.7E-03	2.4E-03	2.9E-03	5.3E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.3E-05	1.0E-05	1.5E-04	6.5E-04	1.5E-03	2.0E-03	3.1E-03	4.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993											
PYAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRC Rate	0.0E+00	2.3E-05	2.1E-05	1.6E-04	6.4E-04	1.5E-03	2.5E-03	2.8E-03	4.9E-03	0.0E+00	4.0E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994											
PYAR	7.0	0.6	2.8	3.2	3.1	10.6	12.2	6.9	1.2	0.0	47.7
CRC Rate	0.0E+00	1.2E-05	1.0E-05	1.3E-04	5.3E-04	1.5E-03	2.5E-03	3.0E-03	1.3E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1995											
PYAR	37.9	1.4	12.5	16.0	18.9	31.1	36.6	27.1	8.5	0.0	190.0
CRC Rate	0.0E+00	0.0E+00	2.1E-05	1.0E-04	5.8E-04	1.3E-03	2.0E-03	3.1E-03	3.2E-03	0.0E+00	3.5E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
1996											
PYAR	82.8	0.9	25.0	31.8	39.2	43.1	57.8	41.5	18.2	0.2	340.6
CRC Rate	0.0E+00	1.2E-05	6.3E-05	2.0E-04	5.6E-04	1.5E-03	2.5E-03	1.7E-03	2.6E-03	0.0E+00	3.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4
1997											
PYAR	115.1	0.0	33.2	42.8	50.0	55.8	77.6	57.8	28.4	2.4	463.1
CRC Rate	0.0E+00	0.0E+00	5.4E-05	2.4E-04	6.2E-04	1.5E-03	2.7E-03	3.0E-03	6.4E-04	0.0E+00	4.3E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.5
1998											
PYAR	142.7	0.8	38.0	58.6	62.2	74.3	91.8	77.0	42.6	4.0	591.9
CRC Rate	0.0E+00	1.3E-05	3.3E-05	1.8E-04	7.6E-04	2.0E-03	2.5E-03	3.1E-03	5.5E-03	0.0E+00	4.8E-04
Expected CRC	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.9

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1984-1998  
 PYAR 1,633.3  
 Observed CRC 0  
 Expected CRC 2.1  
 SIR 0.0  
 95% CI -