

# **Median pathway analysis by patient demographics, cancer stage and route to diagnosis, for colorectal cancer (2013-2017)**

**England**

Produced by the Cancer Alliance Data, Evidence and Analysis Service, a partnership between NHS England and NHS Improvement & Public Health England

May 2019

# Contents

1. Purpose of work
2. Methodology
3. Data completeness
4. Key findings
5. How to interpret the graphs
6. Overview
7. Route to Diagnosis
8. Stage at Diagnosis
9. Sex
10. Age at Diagnosis
11. Ethnicity
12. Income Domain Quintile
13. Data tables and significance testing

## Purpose of work

**Aim:** to provide Cancer Alliances with in-depth analysis of the median time taken for different intervals of the patient pathway (referral, first seen in secondary care, diagnosis, first MDT meeting and treatment start).

### **What does it tell a Cancer Alliance?**

The analysis informs Cancer Alliances of variation in time from referral to first treatment by socio-demographic factors, routes to diagnosis and geography for patients diagnosed with colorectal cancer (2013-2017). Cancer Alliances are provided with pathway data for all 19 Cancer Alliances with an England benchmark, and for their respective CCGs and trusts.

### **How should a Cancer Alliance use the data?**

Cancer Alliances can use the data to identify variation, investigate differences as appropriate and develop local strategies to address health inequalities. Cancer Alliances can also use the analysis to identify best practice that can be shared for faster diagnosis and to improve patient experience. Analysis from this project should be considered in conjunction with other related analyses (see below).

### **Link to strategic priorities in cancer programme**

This work supports the strategic priorities outlined in the NHS [Long Term Plan](#) (3.57) of faster diagnosis and reducing health inequalities.

## Purpose of work (cont.)

### Related work

This is one of two strategic projects the Cancer Alliance Data, Evidence and Analysis Service (CADEAS) has undertaken on pathway lengths. The first project '[Analysis of 62-day pathways using 2017/2018 Cancer Waiting Times data for colorectal, lung and prostate cancers](#)' was published in December 2018. Both projects look at the time taken from referral to first treatment for those diagnosed with colorectal, lung and prostate cancers. The first project used the Cancer Waiting Times dataset only. This project covers all incidence of cancer and provides granular demographic data by linking the Cancer Waiting Times dataset to the Cancer Registry. The data are therefore more comprehensive but less timely and includes cases diagnosed up to 31 Dec 2017.

Other related work:

[Routes to diagnosis](#)

### Acknowledgements

This work is produced by CADEAS, a partnership between NHS England and NHS Improvement & Public Health England. It builds on work previously carried out by the NCRAS-TCST (National Cancer Registration and Analysis Service - Transforming Cancer Services Team for London) Partnership.

We would like to thank patients and clinicians who provide the information that is collected by the NHS as part of patients' cancer care.

# Methodology

This analysis uses linked Cancer Registry, Cancer Care Plan and Cancer Waiting Times (CWT) datasets for patients aged twenty years or older, diagnosed with colorectal (C18-C20) cancer.

The median time taken between the different intervals in the pathway has been calculated and segmented by the following:

- Year of diagnosis
- Sex
- Stage at diagnosis
- Age at diagnosis
- Ethnicity
- Income domain quintile

Cancer cases diagnosed until the end of 2016 can now be linked to the route to diagnosis. Further analysis can therefore be carried out on the median pathways for those diagnosed with cancer through the 62-day pathway and other routes.

A supplementary report will be provided with analysis of the median pathways for patients diagnosed through a Two Week Wait referral (TWW) compared with all other routes to diagnosis.

As outlined in the [National Cancer Waiting Times Monitoring Dataset Guidance](#), the two CWT adjustments; first seen adjustment (2.4) and treatment adjustment (4.19), have been included in the median time taken calculations, in line with CWT official statistics.

## Methodology (cont.)

Cancer Alliances will receive reports presented at the following geographical levels:

- England
- Cancer Alliance
- Resident CCG
- Diagnosis Trust

### **Caveats:**

1. Figures for Cancer Alliances as a whole are derived from their respective CCGs.
2. Caution should be taken when interpreting results with small cohorts as small numbers can lead to variation and unreliability of data. In cases where there are less than six patients, the patient number is recorded as <6.
3. Please note that the median pathway length from referral to first treatment may not be the same as the sum of the median lengths for each pathway interval.

# Data completeness: colorectal cancer - England (2013-2017)

	Variable	Sources used	2013		2014		2015		2016		2017	
			Patient count (N)	Completeness (%)	Patient count (N)	Completeness (%)	Patient count (N)	Completeness (%)	Patient count (N)	Completeness (%)	Patient count (N)	Completeness (%)
<b>Cancer Registry<sup>1</sup></b>	<b>Total patients</b>	PHE national cancer registration data	34,284	100.0	34,315	100.0	35,054	100.0	35,216	100.0	34,813	100.0
	<b>Death Certificate Only<sup>2</sup></b>	PHE national cancer registration data	147	0.4	68	0.2	51	0.2	32	0.1	157	0.5
<b>Median Pathway Cohort</b>	<b>Analysis cohort</b>	PHE national cancer registration data	34,137	100.0	34,247	100.0	35,003	100.0	35,184	100.0	34,656	100.0
	<b>Referral date</b>	Cancer Waiting Times database	23,604	69.1	23,701	69.2	24,719	70.6	25,650	72.9	26,272	75.8
	<b>First seen date</b>	Cancer Waiting Times database	22,677	66.4	23,109	67.5	23,888	68.3	24,393	69.3	24,845	71.7
	<b>Diagnosis date</b>	Derived from PHE's national cancer registration data <sup>3</sup>	34,137	100.0	34,247	100.0	35,003	100.0	35,184	100.0	34,656	100.0
	<b>MDT date</b>	Cancer Waiting Times database, Cancer Care Plan database	27,502	80.6	28,365	82.8	29,208	83.4	29,318	83.3	28,880	83.3
	<b>Treatment start date</b>	Cancer Waiting Times database	26,985	79.1	26,901	78.6	27,841	79.5	28,111	79.9	28,171	81.3

1. **Cancer Registry:** cohort is as used by the Office for National Statistics and [CancerData](#)
  2. Records identified as **Death Certificate Only** are not included in this analysis.
  3. The cancer registry derives the diagnosis date from the following events in order of prioritisation: first histological/ cytological confirmation of the malignancy, the first admission to hospital because of the malignancy, and when a patient is evaluated in outpatient clinic.
- Due to data completeness, the count of patients will differ in any given interval of the patient pathway and therefore, any labels detailing patient counts are those for the pathway as a whole i.e. patients diagnosed.

## Key findings

*Statistically significant findings are denoted with \**

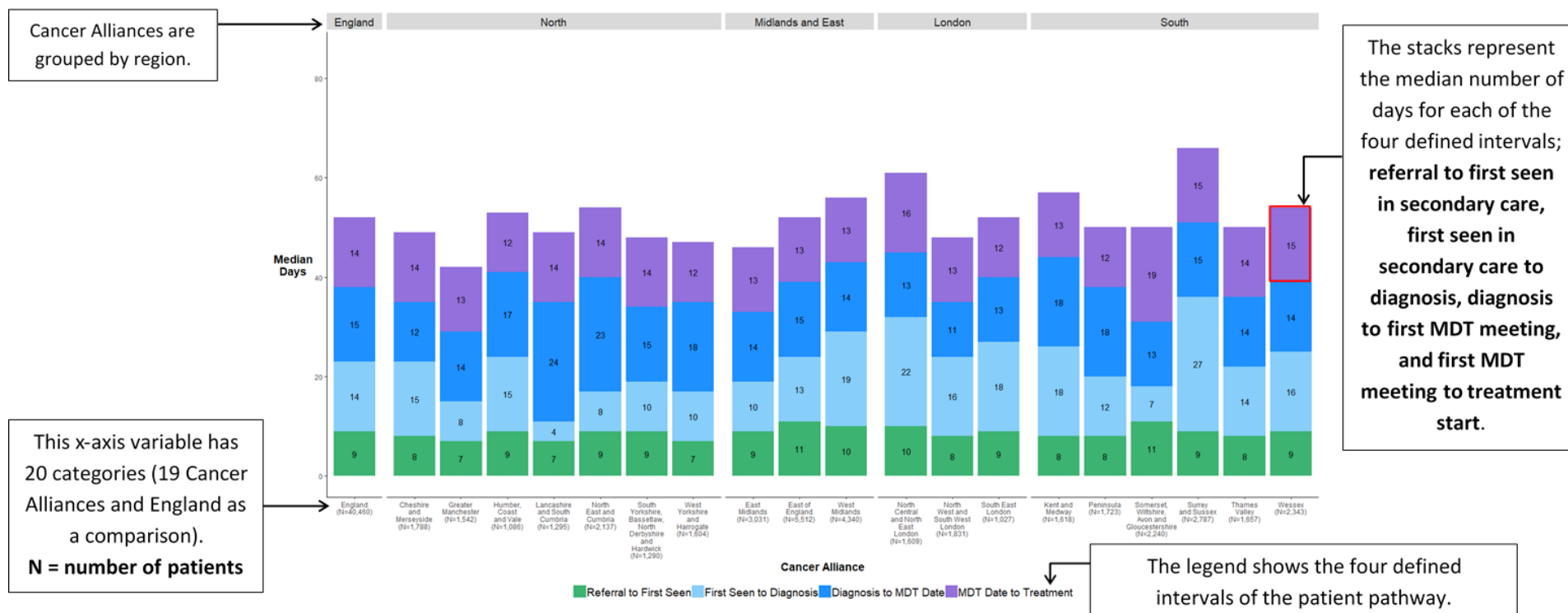
- Colorectal cancer has the longest median pathway of colorectal, lung and prostate cancers with the diagnosis to MDT and MDT to treatment intervals driving this.
- Patients diagnosed through an emergency presentation are associated with the shortest median pathway, and GP referrals are associated with the longest median pathways.
- Patients diagnosed with stage 1 colorectal cancer have statistically significantly longer median pathways than all other patients with patients diagnosed with stage 4 colorectal cancer statistically significantly having the shortest pathway.\*
- Women have statistically significantly shorter median time taken for the referral to first seen in secondary care and first MDT to treatment intervals of the pathway compared with men.\*
- The youngest and oldest patients have the shortest median pathway lengths.\*
- Patients of Black ethnicity have a statistically significantly longer median pathway length for the first seen to diagnosis interval in 2017.\*
- There is little variation in the median pathway length across the different income domain quintiles.



# How to interpret the graphs

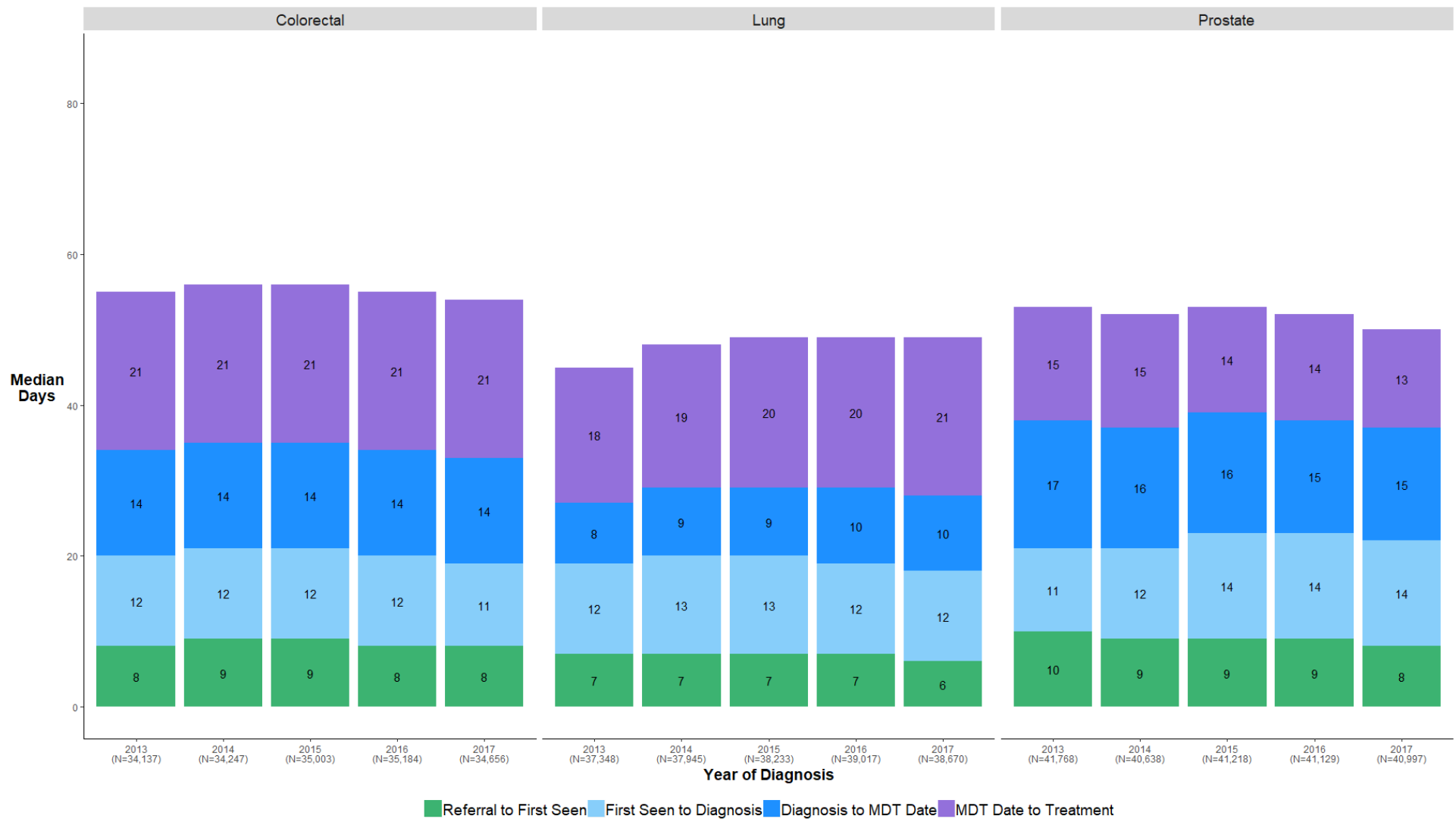
The patient pathway has been stratified into four intervals; **referral to first seen in secondary care, first seen in secondary care to diagnosis, diagnosis to first MDT meeting, and first MDT meeting to treatment start** - each graph is presented as stacked column bar charts and the figures within the bars show the median number of days for each interval of the pathway.

Below is an example graph displaying variation in the median number of days taken from referral to first treatment received for prostate cancer, stratified by the defined intervals of the pathway and Cancer Alliances in 2016.

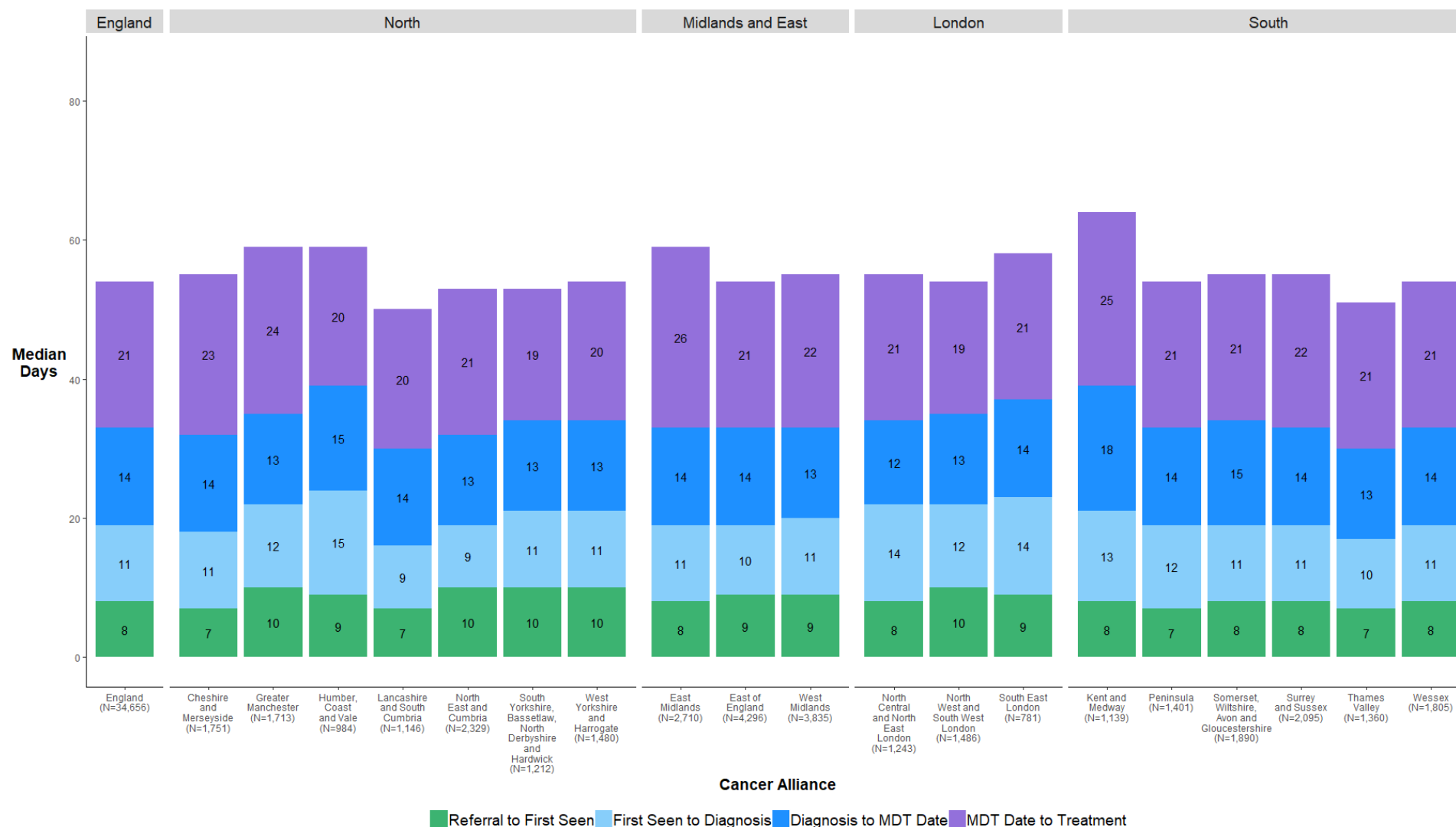


# Overview

# National Overview: median days from referral to treatment, for colorectal, lung and prostate cancers, by year of diagnosis (2013-2017)

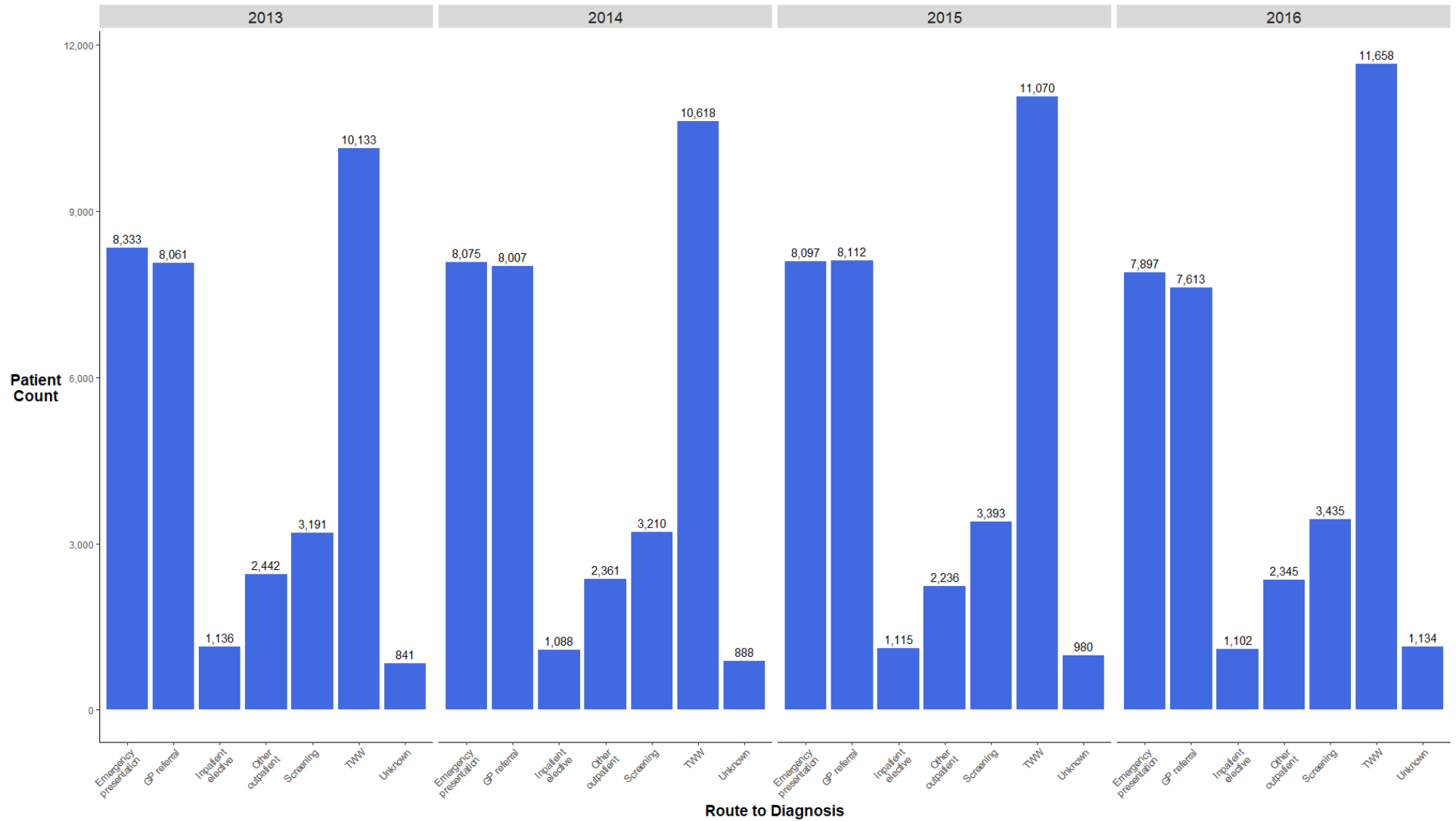


# Colorectal cancer: median days from referral to treatment, by Cancer Alliance (2017)

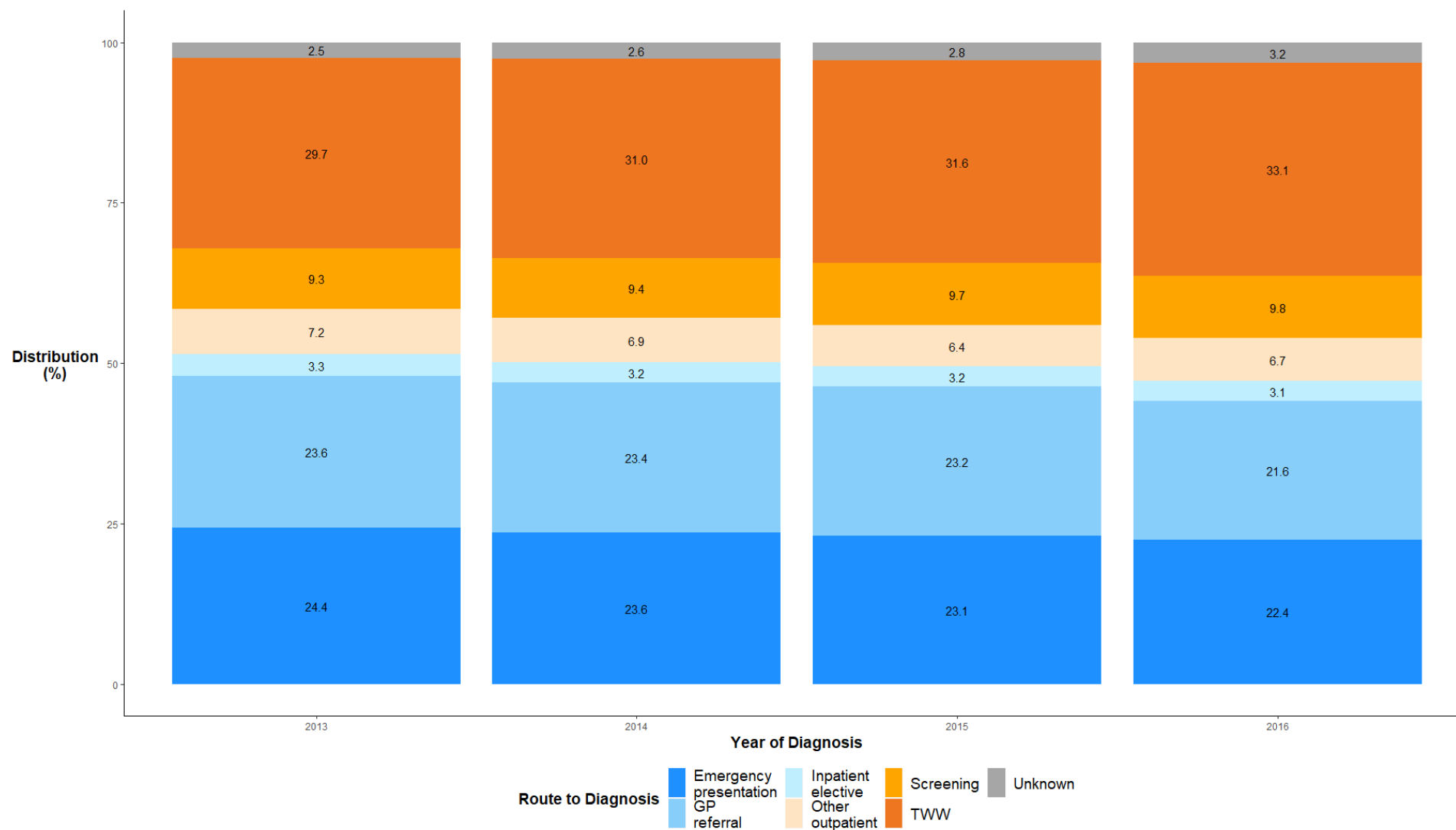


## Route to diagnosis

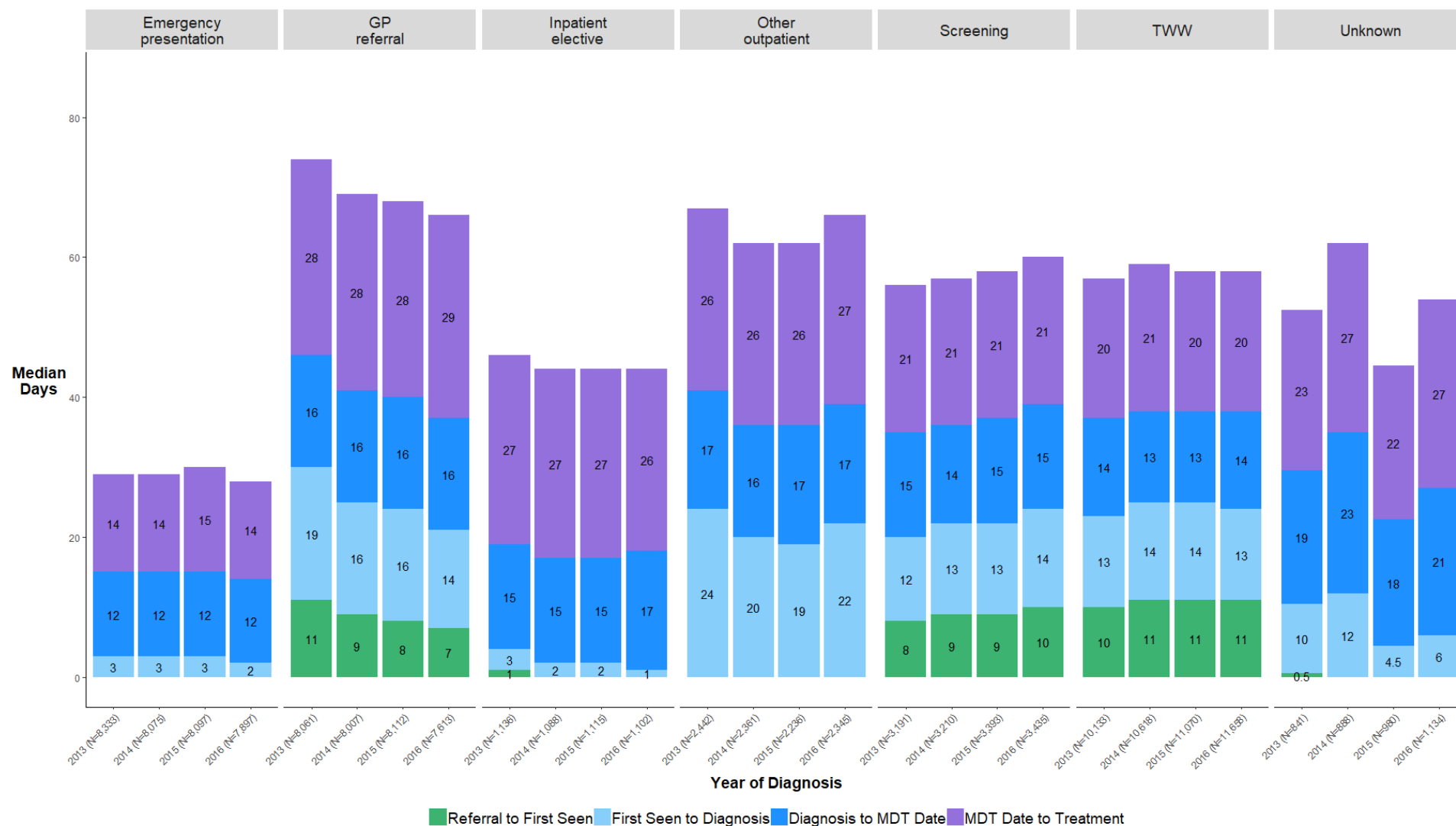
# Colorectal cancer: Patient counts, by route to diagnosis (2013-2016)



# Colorectal cancer: distribution of patients, by route to diagnosis (2013-2016)



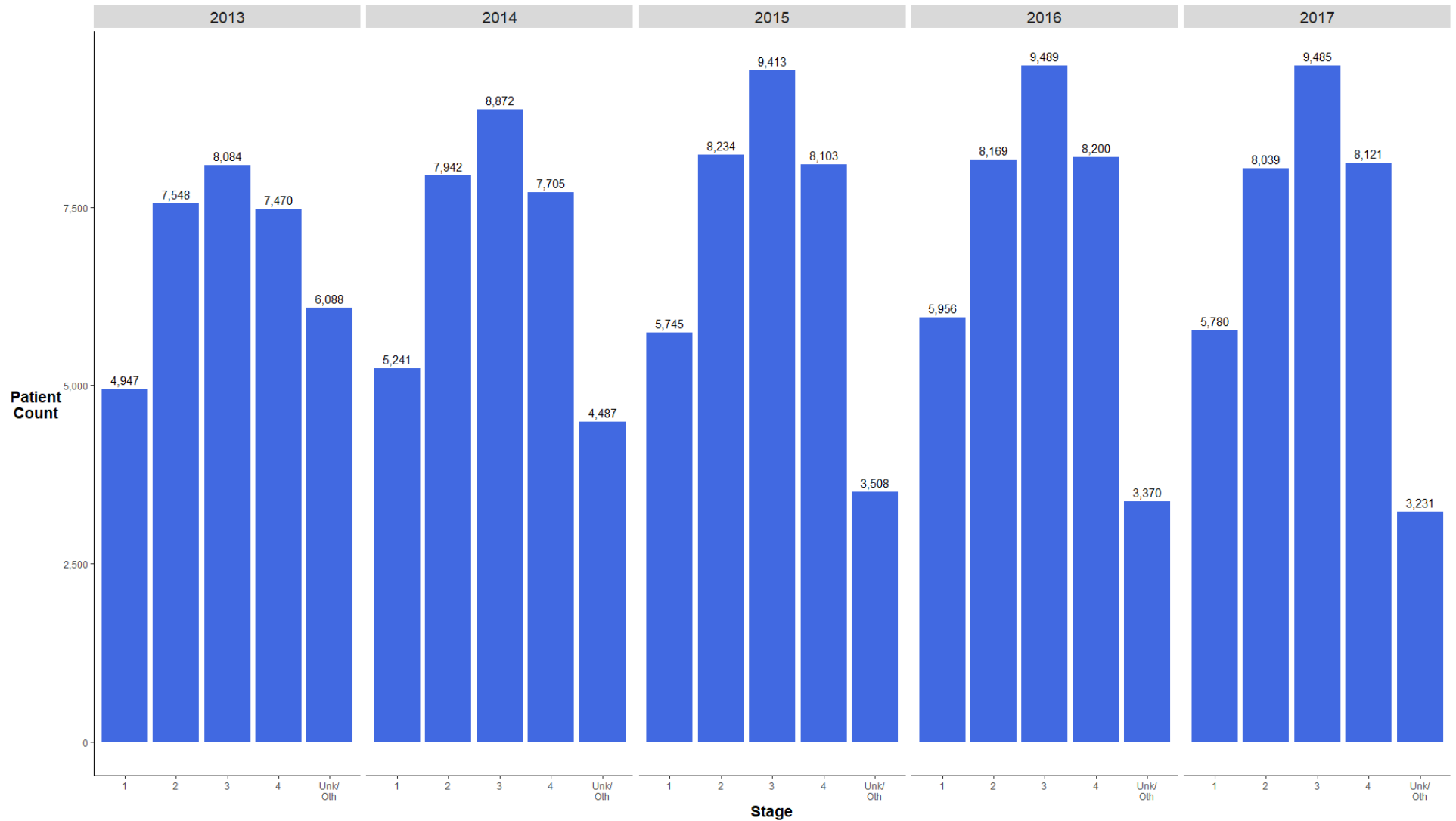
# Colorectal cancer: median days from referral to treatment, by route to diagnosis (2013-2016)



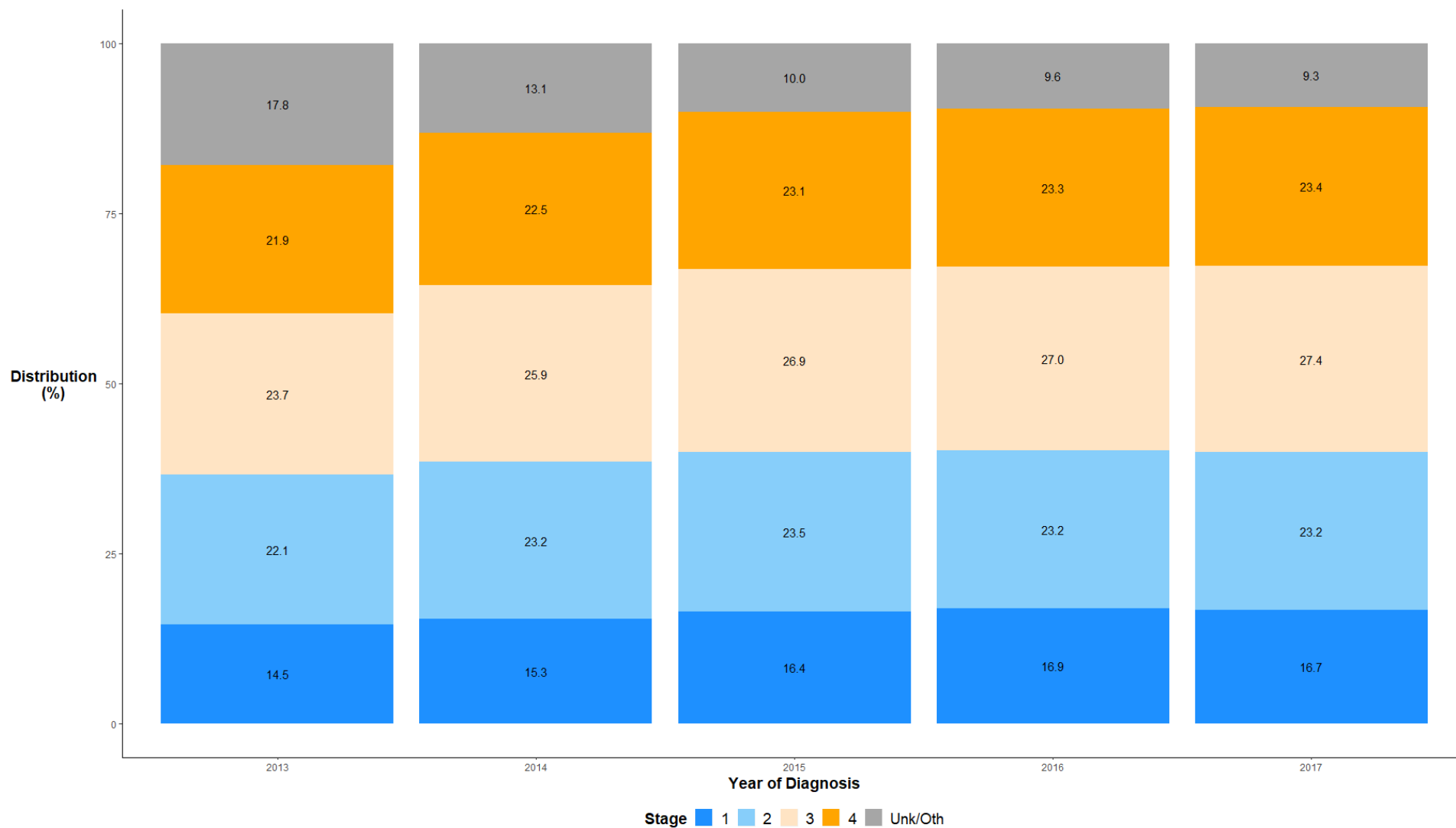


## Stage at diagnosis

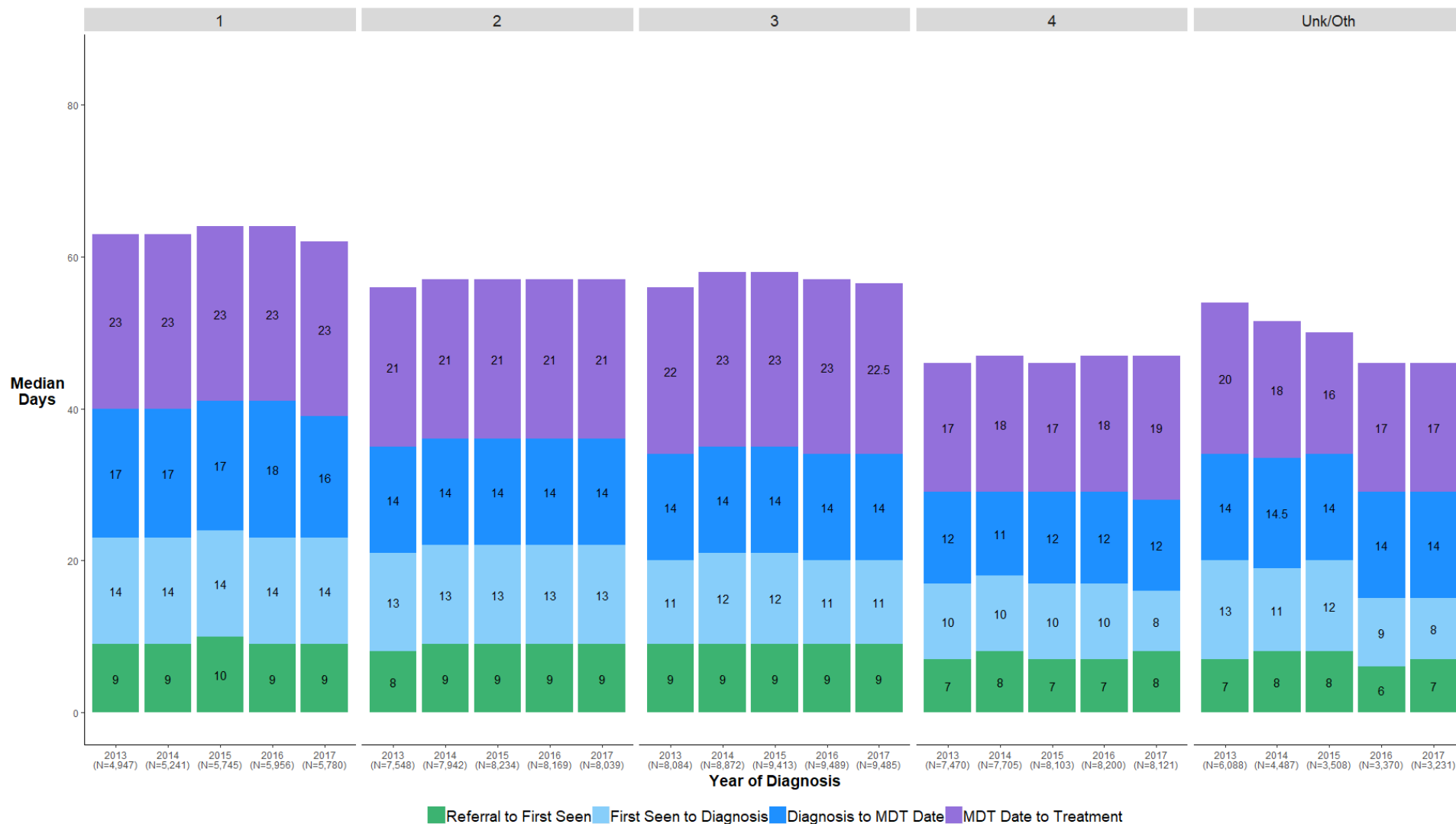
# Colorectal cancer: Patient counts, by stage at diagnosis (2013-2017)



## Colorectal cancer: distribution of patients, by stage at diagnosis (2013-2017)

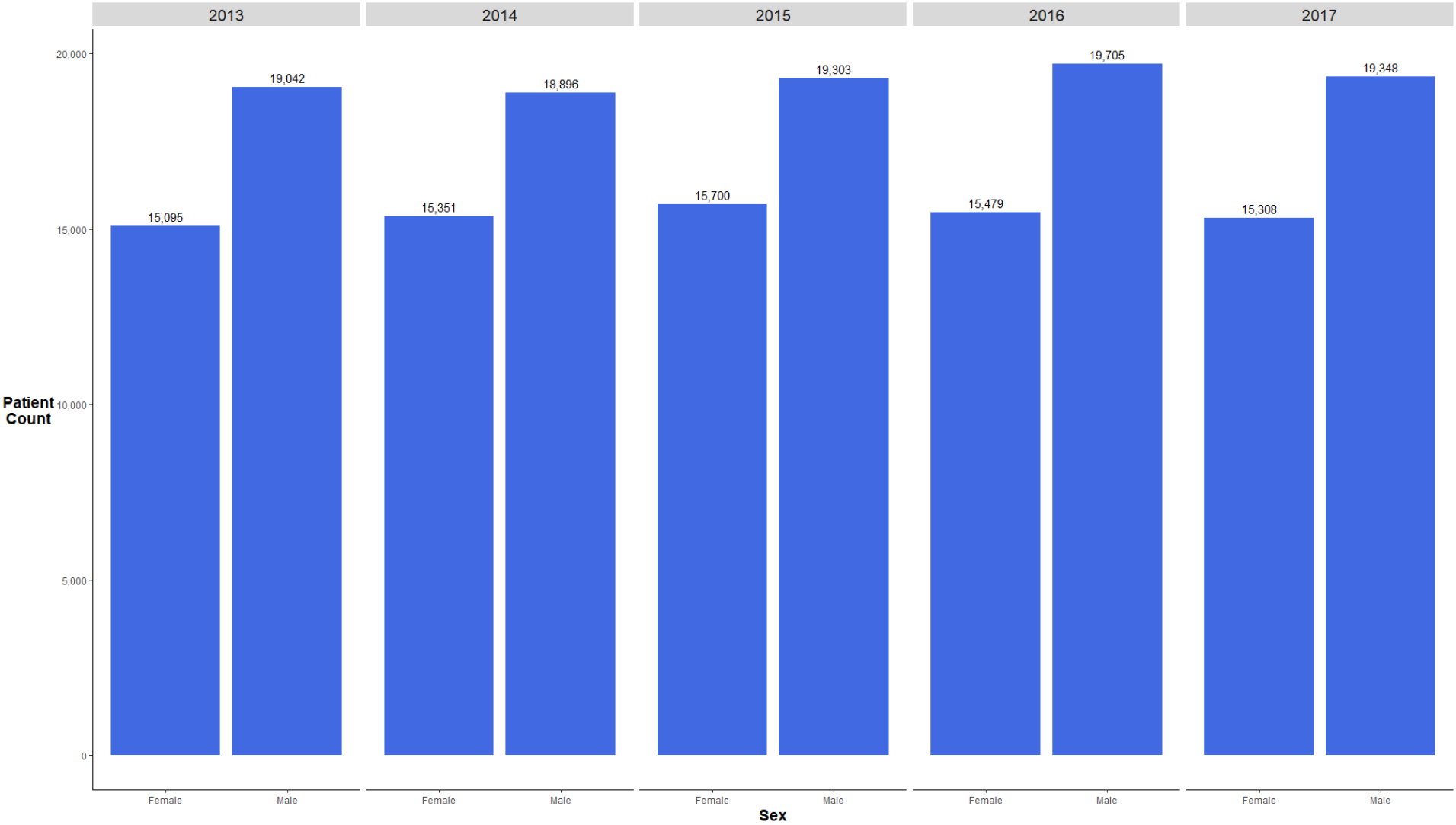


# Colorectal cancer: median days from referral to treatment, by stage at diagnosis (2013-2017)

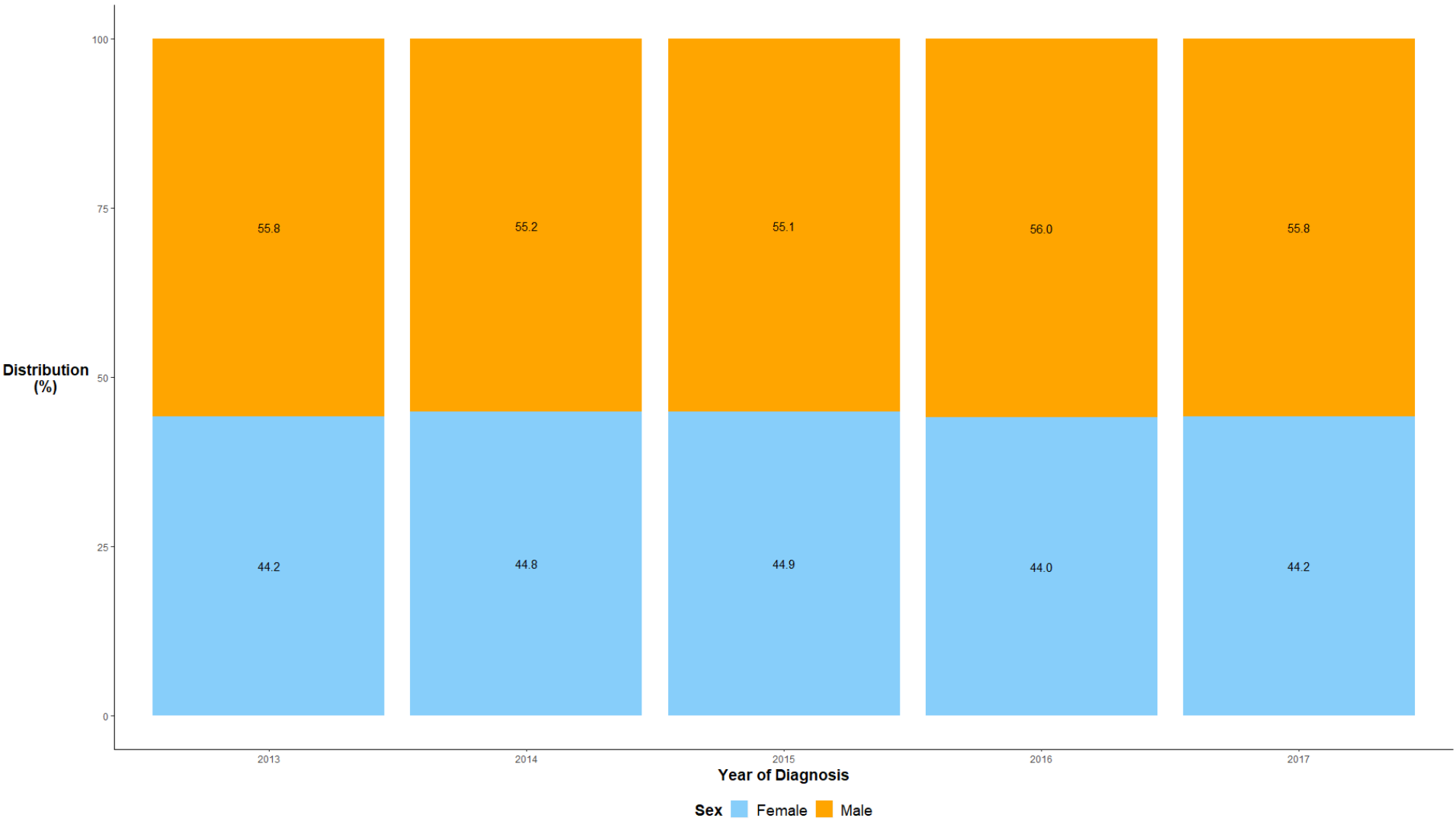


**Sex**

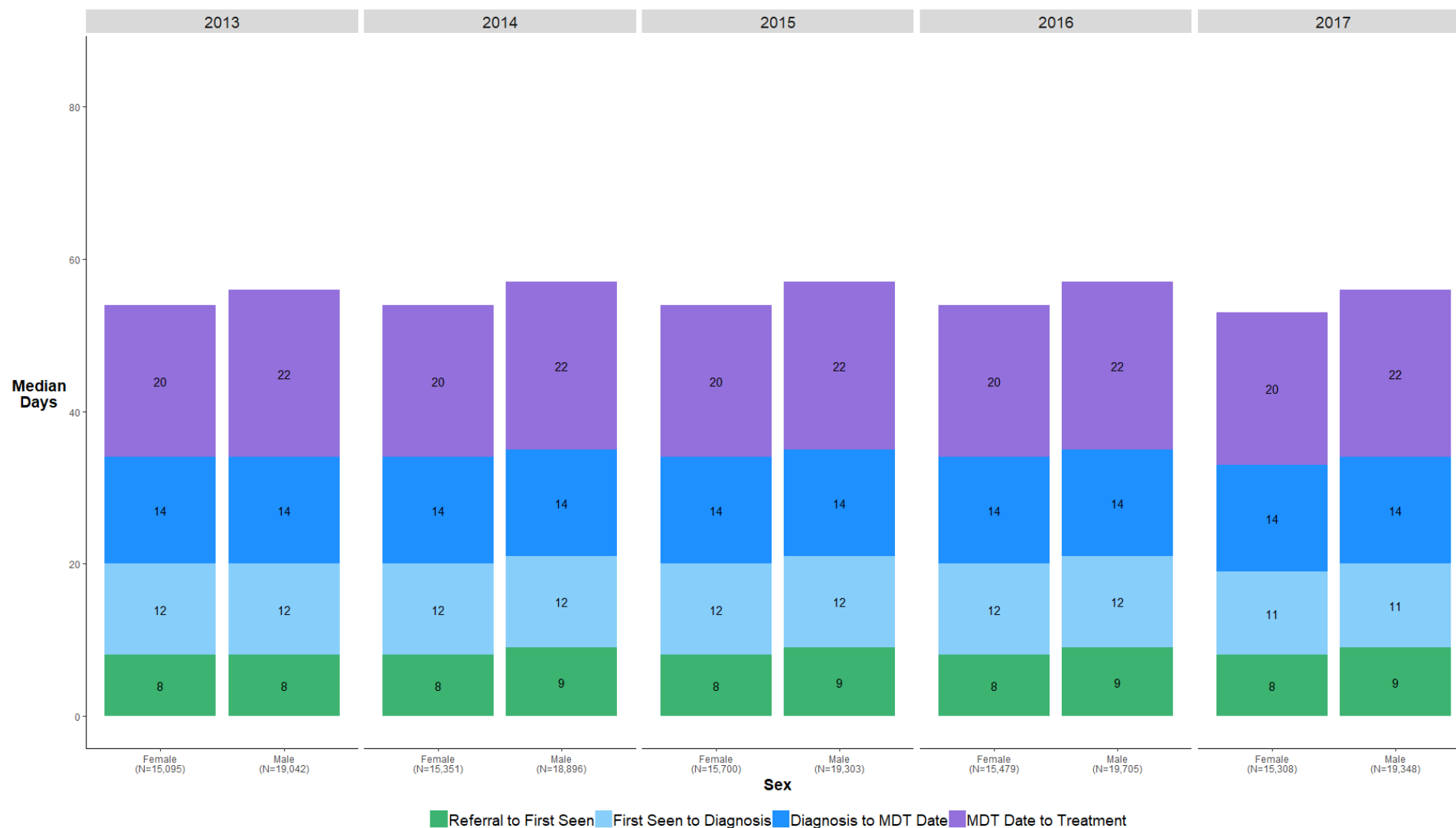
# Colorectal cancer: Patient counts, by sex (2013-2017)



# Colorectal cancer: distribution of patients, by sex (2013-2017)



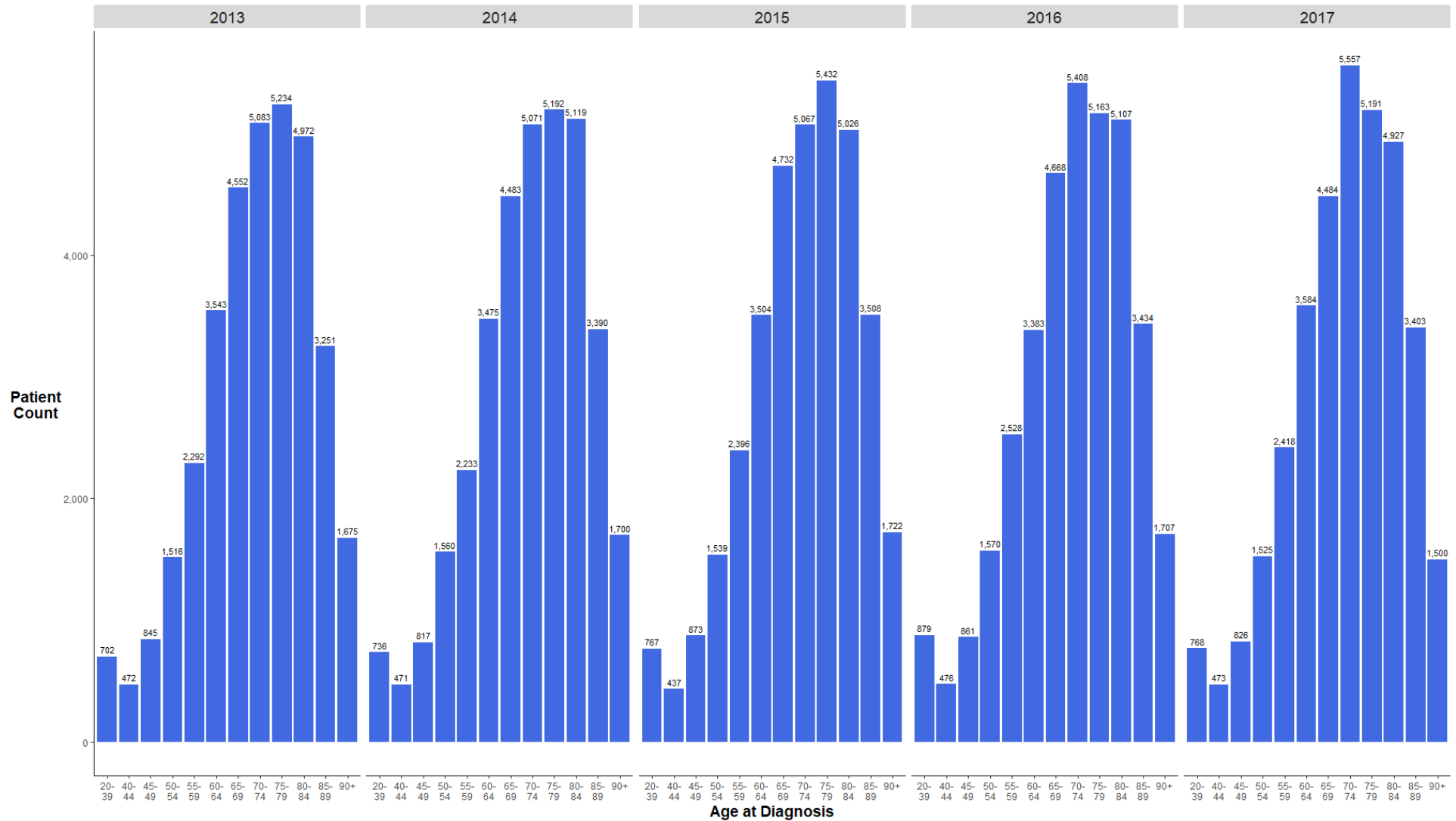
# Colorectal cancer: median days from referral to treatment, by sex (2013-2017)



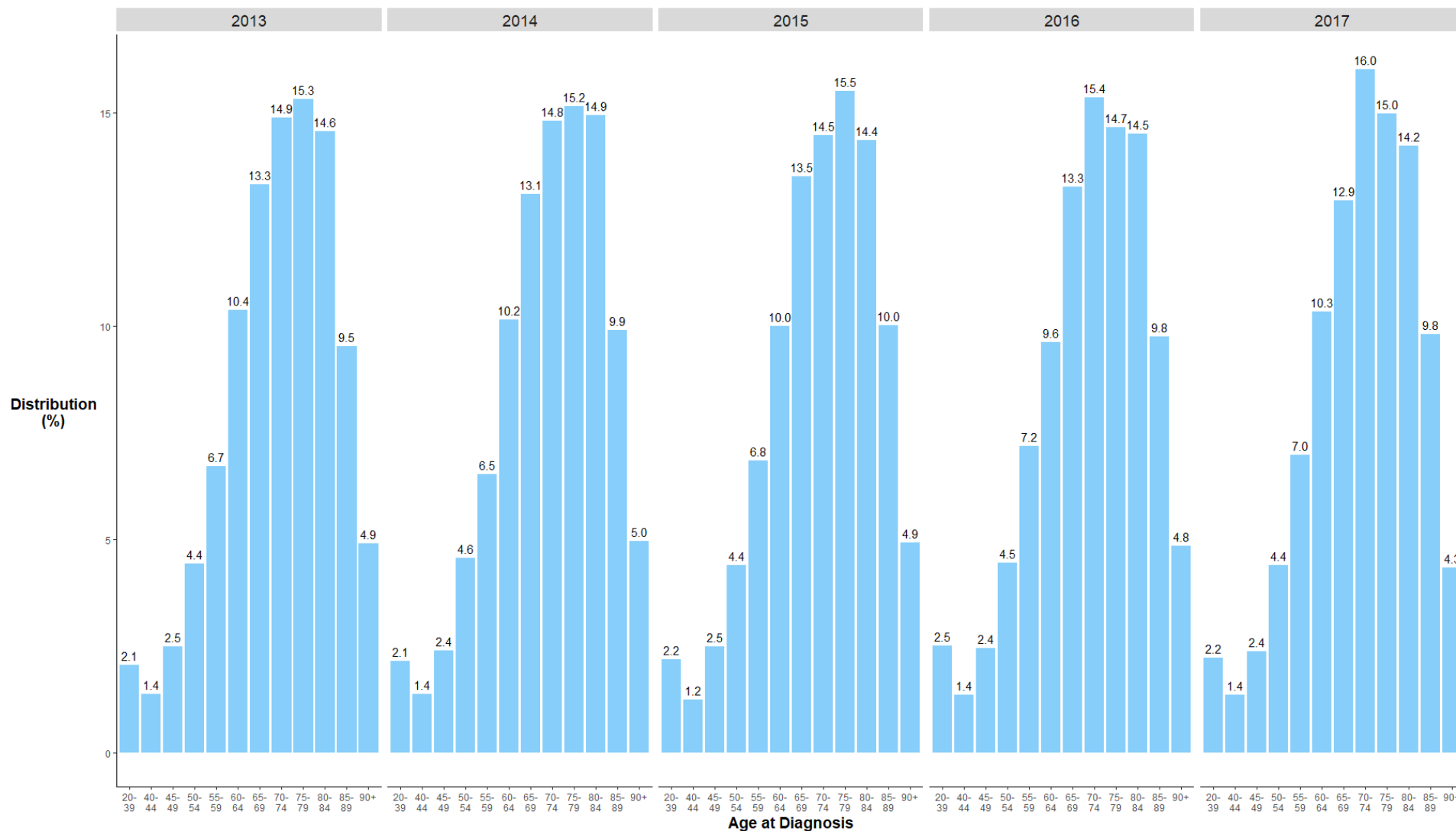


## **Age at diagnosis**

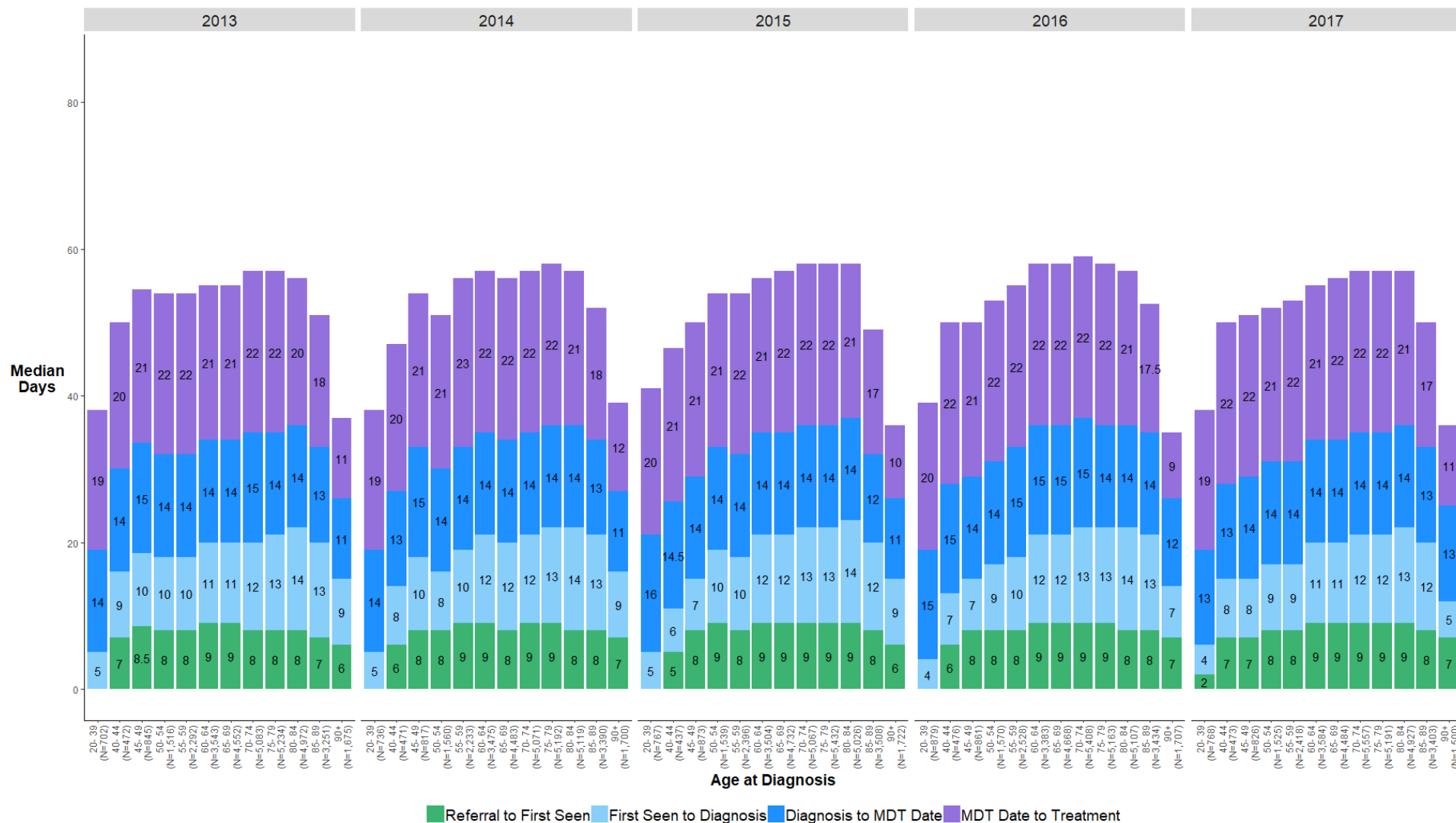
# Colorectal cancer: Patient counts, by age at diagnosis (2013-2017)



# Colorectal cancer: distribution of patients, by age at diagnosis (2013-2017)

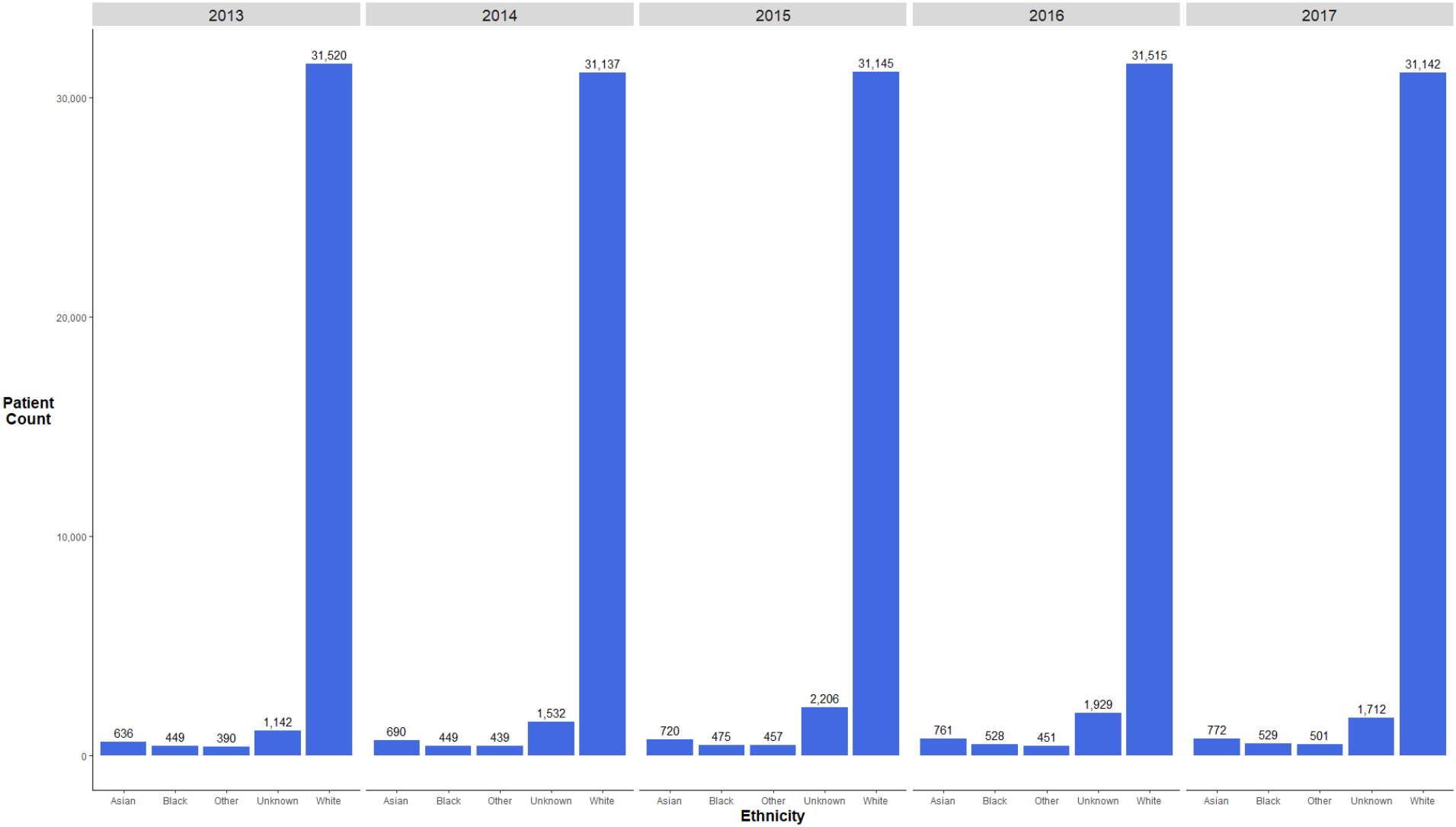


# Colorectal cancer: median days from referral to treatment, by age at diagnosis (2013-2017)

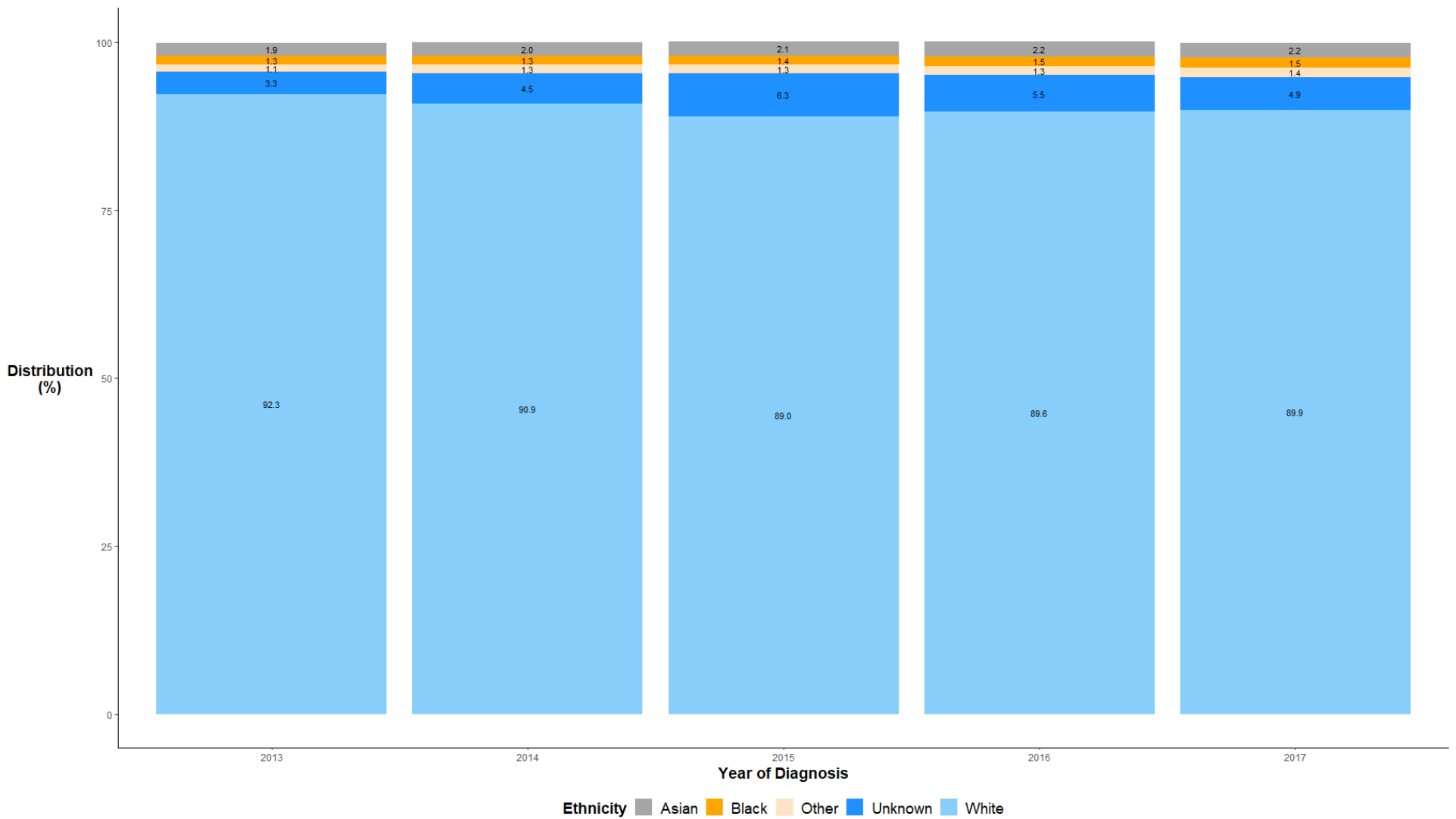


# Ethnicity

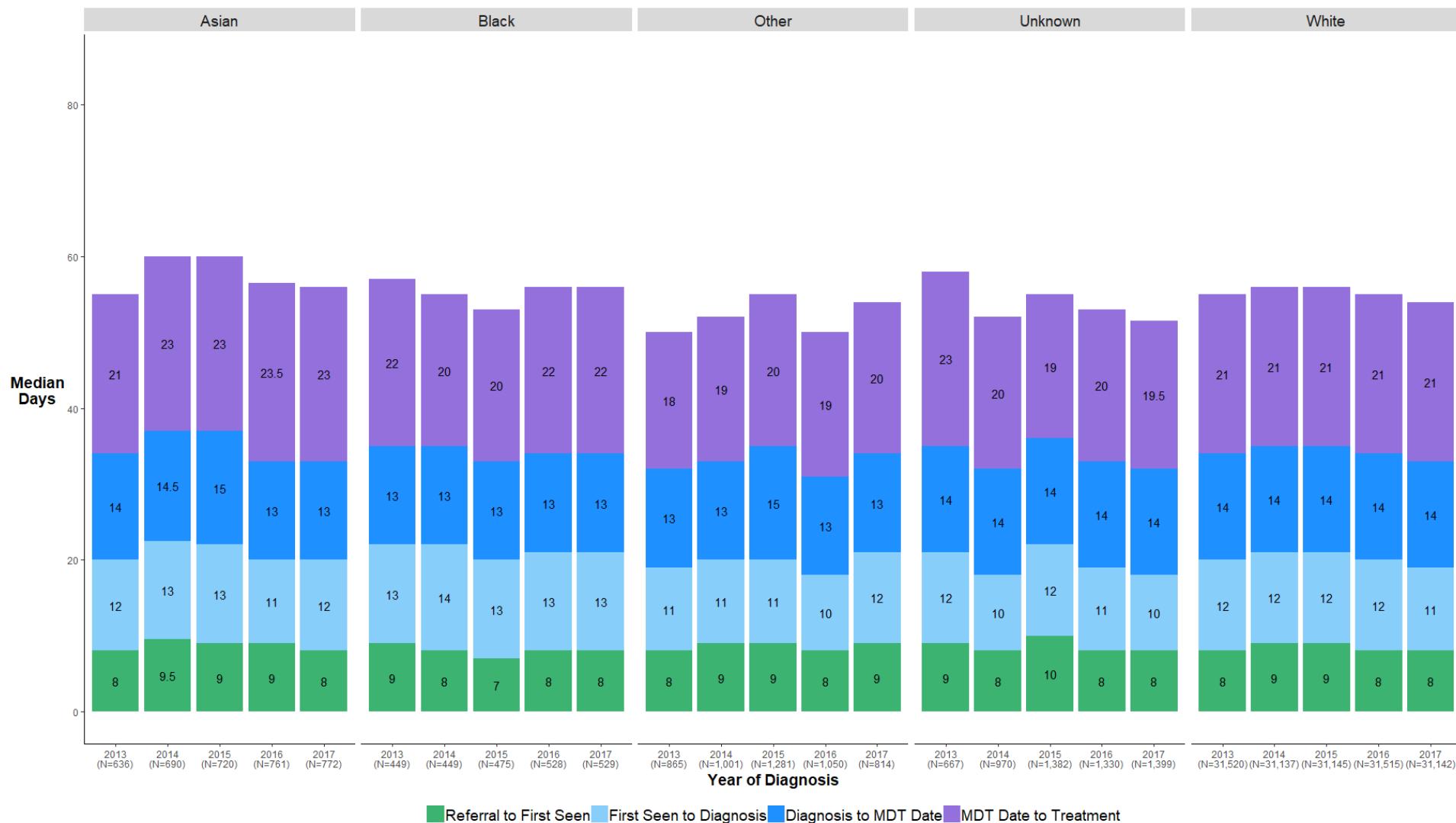
# Colorectal cancer: Patient counts, by ethnicity (2013-2017)



# Colorectal cancer: distribution of patients, by ethnicity (2013-2017)



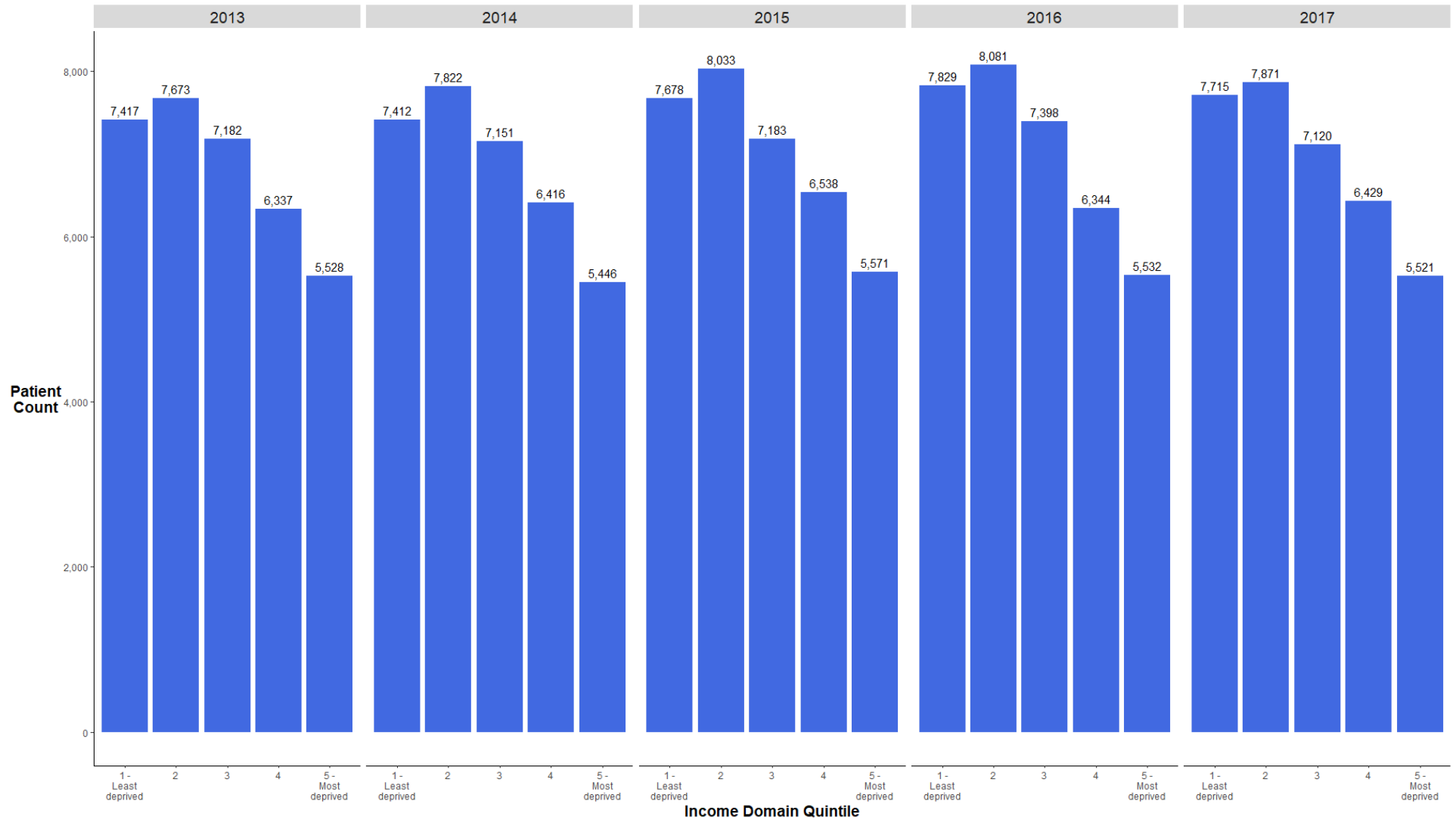
# Colorectal cancer: median days from referral to treatment, by ethnicity (2013-2017)



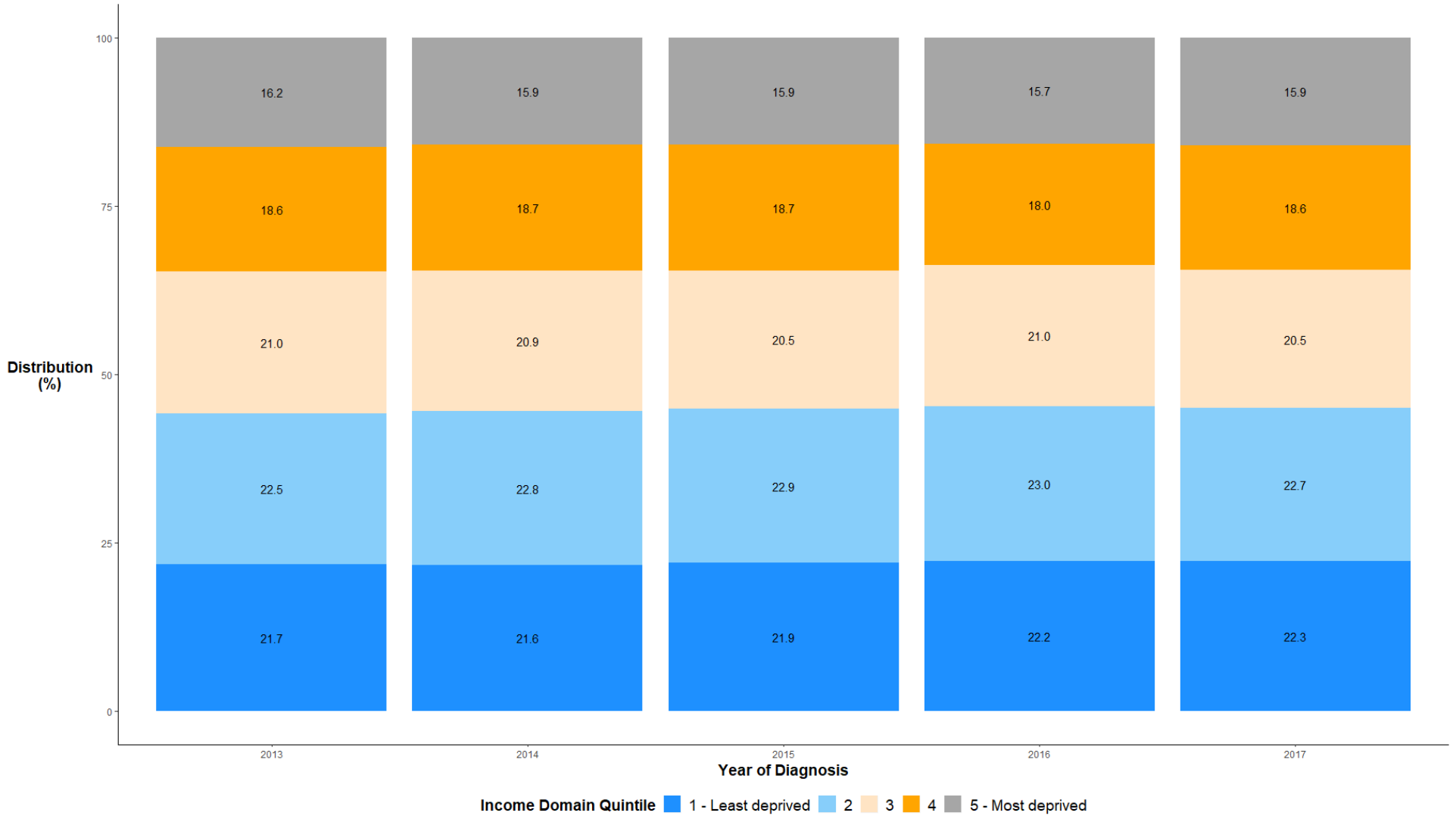


## Income Domain Quintile

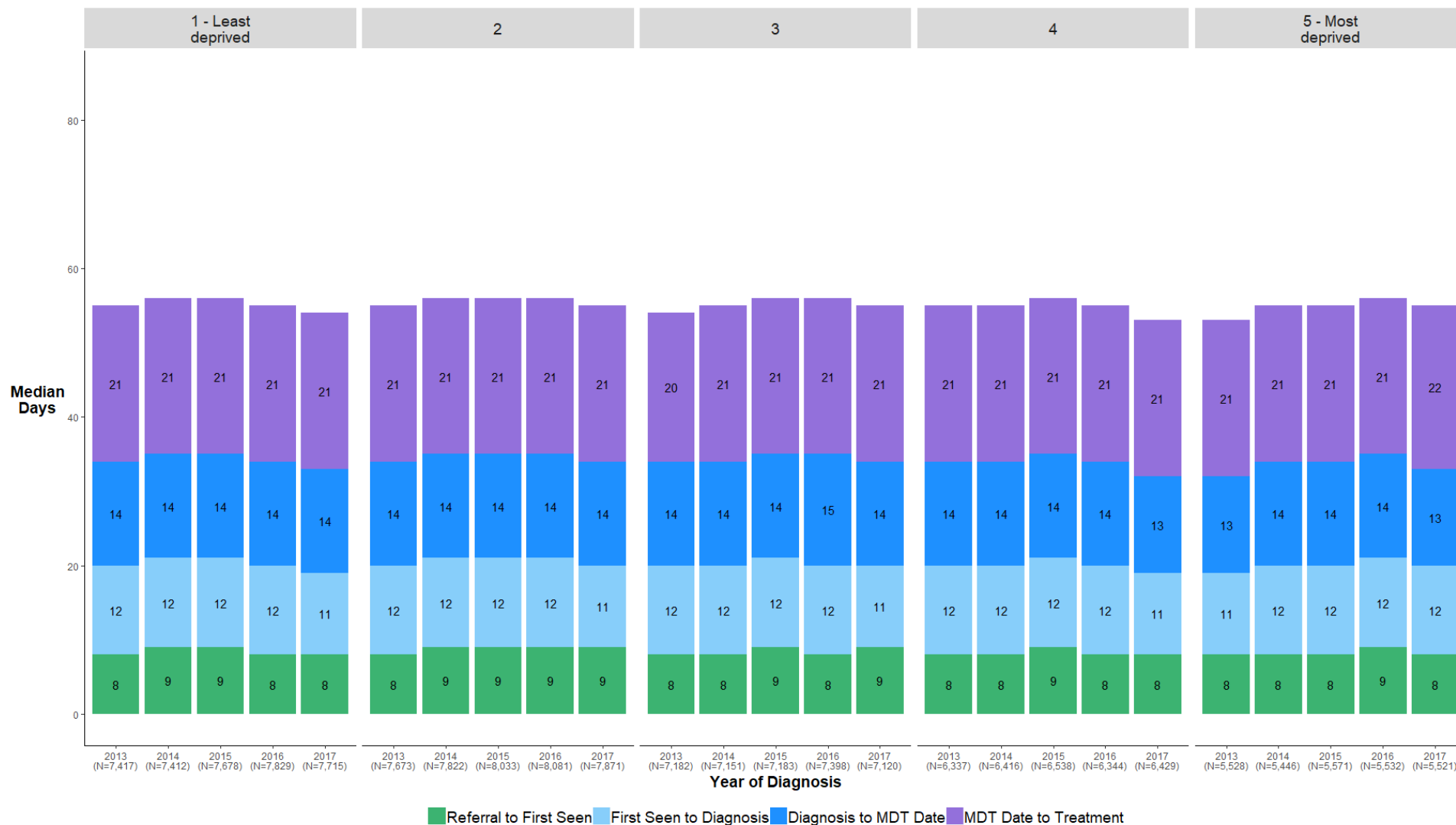
# Colorectal cancer: Patient counts, by income domain quintile (2013-2017)



# Colorectal cancer: distribution of patients, by income domain quintile (2013-2017)



# Colorectal cancer: median days from referral to treatment, by income domain quintile (2013-2017)



## Data tables and significance testing

# Colorectal cancer: statistical significance testing, by Cancer Alliance (2017)

Statistical significance testing has been carried out on all variables for 2017 data, except for the route to diagnosis variable which has been carried out for 2016 data.

Region	Cancer Alliance	Median Days (Confidence Intervals)			
		Referral to First Seen	First Seen to Diagnosis	Diagnosis to MDT Date	MDT Date to Treatment
<b>England (Reference)</b>	<b>England</b>	<b>8 (8-9)</b>	<b>11 (11-11)</b>	<b>14 (14-14)</b>	<b>21 (21-21)</b>
North	Cheshire and Merseyside	7 (7-8)	11 (10-12)	14 (14-15)	<b>23 (22-24)</b>
	Greater Manchester	<b>10 (9-10)</b>	12 (11-12)	<b>13 (12-13)</b>	<b>24 (22-24)</b>
	Humber, Coast and Vale	9 (8-10)	<b>15 (14-17)</b>	15 (14-15)	20 (19-22)
	Lancashire and South Cumbria	7 (7-8)	<b>9 (7-10)</b>	14 (14-15)	20 (19-21)
	North East and Cumbria	<b>10 (9-10)</b>	<b>9 (8-10)</b>	<b>13 (13-13)</b>	21 (20-21)
	South Yorkshire, Bassetlaw, North Derbyshire and Hardwick	<b>10 (9-10)</b>	11 (9-12)	13 (12-14)	<b>19 (17-20)</b>
	West Yorkshire and Harrogate	<b>10 (9-10)</b>	11 (10-13)	13 (13-14)	20 (19-21)
London	North Central and North East London	8 (8-8)	<b>14 (13-15)</b>	<b>12 (11-13)</b>	21 (20-22)
	North West and South West London	<b>10 (9-10)</b>	12 (11-13)	13 (12-14)	<b>19 (17-20)</b>
	South East London	<b>9 (9-10)</b>	<b>14 (13-16)</b>	14 (12-15)	21 (19-22)
Midlands and East	East Midlands	8 (8-8)	11 (10-12)	14 (13-14)	<b>26 (25-27)</b>
	East of England	9 (8-9)	10 (10-11)	14 (14-14)	21 (20-22)
	West Midlands	<b>9 (9-10)</b>	11 (10-12)	13 (13-14)	22 (21-22)
South	Kent and Medway	8 (7-9)	<b>13 (12-14)</b>	<b>18 (16-20)</b>	<b>25 (22-26)</b>
	Peninsula	7 (7-8)	12 (10-14)	14 (13-14)	21 (19-22)
	Somerset, Wiltshire, Avon and Gloucestershire	8 (8-9)	11 (9-12)	15 (14-15)	21 (20-22)
	Surrey and Sussex	8 (8-8)	11 (10-12)	14 (14-15)	22 (21-23)
	Thames Valley	<b>7 (7-7)</b>	10 (9-11)	<b>13 (12-13)</b>	21 (19-23)
	Wessex	8 (7-8)	11 (9-11)	14 (13-14)	21 (20-22)

- Statistically significant results are denoted in blue

# Colorectal cancer: statistical significance testing (2017)

Factor	Category	Median Days (Confidence Intervals)			
		Referral to First Seen	First Seen to Diagnosis	Diagnosis to MDT Date	MDT Date to Treatment
Route to diagnosis (2016)	<b>TWW (Reference)</b>	<b>11 (10-11)</b>	<b>13 (13-14)</b>	<b>14 (13-14)</b>	<b>20 (20-21)</b>
	Emergency presentation	0 (0-0)	2 (2-2)	12 (12-12)	14 (14-15)
	GP referral	7 (6-7)	14 (14-15)	16 (16-17)	29 (28-29)
	Inpatient elective	0 (0-0)	1 (1-4)	17 (15-18)	26 (24-28)
	Other outpatient	0 (0-0)	22 (21-25)	17 (16-18)	27 (26-28)
	Screening	10 (9-10)	14 (13-14)	15 (15-15)	21 (21-22)
	Unknown	0 (0-3)	6 (3-10)	21 (20-24)	27 (25-29)
Stage at diagnosis	<b>1 (Reference)</b>	<b>9 (9-10)</b>	<b>14 (13-14)</b>	<b>16 (16-17)</b>	<b>23 (22-24)</b>
	2	9 (8-9)	13 (12-13)	14 (13-14)	21 (20-21)
	3	9 (8-9)	11 (10-11)	14 (13-14)	22.5 (22-23)
	4	8 (7-8)	8 (8-9)	12 (11-12)	19 (18-19)
	Unk/Oth	7 (6-8)	8 (7-9)	14 (13-15)	17 (15-18)
Sex	<b>Male (Reference)</b>	<b>9 (8-9)</b>	<b>11 (11-11)</b>	<b>14 (14-14)</b>	<b>22 (22-22)</b>
	Female	8 (8-8)	11 (11-12)	14 (13-14)	20 (20-21)
Age at diagnosis (years)	20- 39	2 (0-4)	4 (3-7)	13 (12-14)	19 (17-21)
	40- 44	7 (5-8)	8 (5-11)	13 (12-15)	22 (21-25)
	45- 49	7 (6-7)	8 (6-10)	14 (13-15)	22 (21-25)
	50- 54	8 (8-9)	9 (8-10)	14 (13-14)	21 (20-22)
	55- 59	8 (7-8)	9 (8-10)	14 (14-14)	22 (21-23)
	<b>60- 64 (Reference)</b>	<b>9 (9-9)</b>	<b>11 (11-12)</b>	<b>14 (13-14)</b>	<b>21 (21-22)</b>
	65- 69	9 (9-9)	11 (10-12)	14 (13-14)	22 (22-23)
	70- 74	9 (8-9)	12 (11-12)	14 (14-14)	22 (22-23)
	75- 79	9 (9-9)	12 (12-13)	14 (13-14)	22 (21-23)
	80- 84	9 (8-9)	13 (13-14)	14 (13-14)	21 (21-22)
	85- 89	8 (7-8)	12 (11-13)	13 (12-13)	17 (16-18)
	90+	7 (6-8)	5 (3-6)	13 (12-13)	11 (9-12)
Ethnicity	<b>White (Reference)</b>	<b>8 (8-9)</b>	<b>11 (11-11)</b>	<b>14 (14-14)</b>	<b>21 (21-22)</b>
	Asian	8 (8-9)	12 (11-13)	13 (13-14)	23 (21-25)
	Black	8 (7-9)	13 (12-14)	13 (12-15)	22 (19-25)
	Other	9 (8-10)	12 (9-14)	13 (12-14)	20 (18-21)
	Unknown	8 (8-9)	10 (8-11)	14 (13-14)	19.5 (19-21)
Income Domain Quintile	<b>1 - Least deprived (Reference)</b>	<b>8 (8-9)</b>	<b>11 (10-12)</b>	<b>14 (14-14)</b>	<b>21 (20-21)</b>
	2	9 (8-9)	11 (11-12)	14 (14-14)	21 (21-22)
	3	9 (8-9)	11 (10-11)	14 (14-14)	21 (21-22)
	4	8 (8-8)	11 (11-12)	13 (13-14)	21 (20-22)
	5 - Most deprived	8 (8-9)	12 (11-12)	13 (13-14)	22 (21-22)

- Statistically significant results are denoted in blue