

# **Routes to Diagnosis**

## ***Central Nervous System***

**NCIN SSCRG**  
**26<sup>th</sup> March 2014**

**Sean McPhail, Jon Shelton, Sam Johnson,  
Alex Ives, Matt Greenslade**

# Routes to Diagnosis

- What is Routes to Diagnosis?
- Description of Routes
- Cancer sites within CNS
- Overall results
- *A flavour of* the more specific results (age, sex, deprivation, survival)
- Further application of Routes to Diagnosis data

# Background to Routes to Diagnosis

- Nationally, what didn't we know?
  - How people come to get diagnosed with cancer
  - Whether late diagnosis arises in cases where patients have not gone through the screening or suspected cancer route
  - What impact awareness and early diagnosis initiatives might have on the routes to diagnosis
- Nationally, what did we want to know?
  - Can we use routinely available datasets to define the route to diagnosis for patients diagnosed with cancer?
  - If so, how do routes differ by cancer site, age, sex, ethnicity, deprivation or geography?
  - Are there differences in outcomes for different routes?

# What is Routes to Diagnosis?

- Take all cancers recorded by cancer registries (2006-2010)
- Gather together routine data sources (hospital attendances and admissions – HES; cancer waiting times – CWT; and screening)
- Ignore all cancer coding in HES and CWT data
- Start at diagnosis date and look for an ‘end-point’ prior to diagnosis
- Work backwards through routine records to find a ‘start-point’
- Use the properties of the start-point to determine the type of Route

# Eight Routes assigned

- **Screen detected:** breast, bowel or cervical
- **Emergency presentation:** emergency route via A&E, emergency GP or consultant outpatient referral, emergency transfer etc
- **Two week wait:** urgent GP referrals with a suspicion of cancer
- **GP referral:** includes routine and non-Two Week Wait GP referrals
- **Other outpatient:** elective route starting with a consultant outpatient appointment
- **Inpatient elective:** elective route starting with an inpatient admission (no earlier information found)
- **Death Certificate Only:** diagnosis by death certificate only
- **Unknown:** no data available from routine datasets

# What's available?

- Results for all cancer sites, and a basic explanation of methodology available from the NCIN website – [http://www.ncin.org.uk/publications/routes to diagnosis](http://www.ncin.org.uk/publications/routes_to_diagnosis)
- Full spreadsheet of results available, containing:
  - proportion by Route by age, sex, deprivation quintile and SCN by year and 2006-10 combined
  - relative survival estimates by age, sex and deprivation quintile for 1, 3, 6, 9, 12, 24 and 36 month survival intervals
- Methodology: *BJC* (2012) **107**, 1220–1226
- Patient level data are available for further analysis and accessible from the Cancer Analysis System

# Cancer sites included

Cancer site/group	ICD10 codes included	Overall metrics	Further breakdowns
Benign Cerebral Meningioma	D320, D329	◆	
Benign Cranial Nerves	D333	◆	
Benign Pituitary	D352	◆	
Benign/Uncertain/Unknown behaviour Brain	D330, D331, D332, D430, D431, D432	◆	
Central Nervous System (incl brain) malignant	C70-C72, C751-C753		◆
Central Nervous System (incl brain) non-invasive	D32, D33, D352-D354, D42-D43, D443-D445		◆
Malignant Brain	C71	◆	
Other central nervous system - malignant	C70, C72, C751-C753	◆	
Other central nervous system - non-invasive	D321, D334-D339, D353, D354, D42, D433-D439, D443-D445	◆	

# Cancer sites included

Cancer site/group	ICD10 codes included	Overall metrics	Further breakdowns
Benign Cerebral Meningioma	D320, D329	◆	
Benign Cranial Nerves	D333	◆	
Benign Pituitary	D352	◆	
Benign/Uncertain/Unknown behaviour Brain	D330, D331, D332, D430, D431, D432	◆	
Central Nervous System (incl brain) malignant	C70-C72, C751-C753		◆
Central Nervous System (incl brain) non-invasive	D32, D33, D352-D354, D42-D43, D443-D445		◆
Malignant Brain	C71	◆	
Other central nervous system - malignant	C70, C72, C751-C753	◆	
Other central nervous system - non-invasive	D321, D334-D339, D353, D354, D42, D433-D439, D443-D445	◆	



# Percentage of diagnosis by route 2006-2010

2006-2010	Screen detected		Two Week Wait		GP referral		Other Outpatient		Inpatient Elective		Emergency presentation		Death Certificate Only		Unknown		Number of cases
All Malignant Neoplasms (excl. NMSC)	5%		27%		27%		10%		3%		23%		0%		4%		1,272,584
Confidence interval	5%	5%	27%	27%	27%	27%	10%	10%	3%	3%	23%	23%	1%	1%	4%	4%	
Benign Cerebral Meningioma			0%		28%		19%		4%		45%		1%		3%		6,345
Confidence interval			0%	1%	27%	30%	18%	20%	3%	4%	44%	46%	1%	1%	3%	4%	
Benign Cranial Nerves			0%		50%		29%		4%		12%		0%		5%		1,869
Confidence interval			0%	1%	48%	52%	27%	32%	3%	5%	10%	13%	0%	1%	4%	6%	
Benign Pituitary			0%		42%		32%		4%		19%		0%		3%		3,161
Confidence interval			0%	0%	41%	44%	31%	34%	3%	5%	18%	20%	0%	1%	2%	3%	
Benign/Uncertain/Unknown behaviour Brain			0%		20%		15%		3%		58%		1%		3%		2,915
Confidence interval			0%	0%	19%	21%	14%	16%	3%	4%	56%	60%	1%	2%	2%	3%	
Malignant Brain			1%		15%		12%		5%		63%		0%		3%		19,284
Confidence interval			1%	1%	15%	16%	12%	13%	4%	5%	62%	64%	0%	1%	3%	4%	
Other central nervous system - malignant			1%		26%		22%		5%		41%		1%		4%		1,257
Confidence interval			0%	1%	24%	29%	19%	24%	4%	6%	39%	44%	0%	2%	3%	6%	
Other central nervous system - non-invasive			0%		34%		22%		6%		35%		0%		3%		2,171
Confidence interval			0%	1%	33%	37%	20%	23%	5%	7%	33%	37%	0%	1%	2%	4%	

# Percentage of diagnosis by route 2006-2010

2006-2010	Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Effective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
All Malignant Neoplasms (excl. NMSC)	5%	27%	27%	10%	3%	23%	0%	4%	1,272,584
Confidence interval	5% 5%	27% 27%	27% 27%	10% 10%	3% 3%	23% 23%	1% 1%	4% 4%	
Benign Cerebral Meningioma		0%	28%	19%	4%	45%	1%	3%	6,345
Confidence interval		0% 1%	27% 30%	18% 20%	3% 4%	44% 46%	1% 1%	3% 4%	
Benign Cranial Nerves		0%	50%	29%	4%	12%	0%	5%	1,869
Confidence interval		0% 1%	48% 52%	27% 32%	3% 5%	10% 13%	0% 1%	4% 6%	
Benign Pituitary		0%	42%	32%	4%	19%	0%	3%	3,161
Confidence interval		0% 0%	41% 44%	31% 34%	3% 5%	18% 20%	0% 1%	2% 3%	
Benign/Uncertain/Unknown behaviour Brain		0%	20%	15%	3%	58%	1%	3%	2,915
Confidence interval		0% 0%	19% 21%	14% 16%	3% 4%	56% 60%	1% 2%	2% 3%	
Malignant Brain		1%	15%	12%	5%	63%	0%	3%	19,284
Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%	62% 64%	0% 1%	3% 4%	
Other central nervous system - malignant		1%	26%	22%	5%	41%	1%	4%	1,257
Confidence interval		0% 1%	24% 29%	19% 24%	4% 6%	39% 44%	0% 2%	3% 6%	
Other central nervous system - non-invasive		0%	34%	22%	6%	35%	0%	3%	2,171
Confidence interval		0% 1%	33% 37%	20% 23%	5% 7%	33% 37%	0% 1%	2% 4%	

# Percentage of diagnosis by route 2006-2010

2006-2010	Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
All Malignant Neoplasms (excl. NMSC)	5%	27%	27%	10%	3%	23%	0%	4%	1,272,584
Confidence interval	5% 5%	27% 27%	27% 27%	10% 10%	3% 3%	23% 23%	1% 1%	4% 4%	
Benign Cerebral Meningioma		0%	28%	19%	4%	45%	1%	3%	6,345
Confidence interval		0% 1%	27% 30%	18% 20%	3% 4%	44% 46%	1% 1%	3% 4%	
Benign Cranial Nerves		0%	50%	29%	4%	12%	0%	5%	1,869
Confidence interval		0% 1%	48% 52%	27% 32%	3% 5%	10% 13%	0% 1%	4% 6%	
Benign Pituitary		0%	42%	32%	4%	19%	0%	3%	3,161
Confidence interval		0% 0%	41% 44%	31% 34%	3% 5%	18% 20%	0% 1%	2% 3%	
Benign/Uncertain/Unknown behaviour Brain		0%	20%	15%	3%	58%	1%	3%	2,915
Confidence interval		0% 0%	19% 21%	14% 16%	3% 4%	56% 60%	1% 2%	2% 3%	
Malignant Brain		1%	15%	12%	5%	63%	0%	3%	19,284
Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%	62% 64%	0% 1%	3% 4%	
Other central nervous system - malignant		1%	26%	22%	5%	41%	1%	4%	1,257
Confidence interval		0% 1%	24% 29%	19% 24%	4% 6%	39% 44%	0% 2%	3% 6%	
Other central nervous system - non-invasive		0%	34%	22%	6%	35%	0%	3%	2,171
Confidence interval		0% 1%	33% 37%	20% 23%	5% 7%	33% 37%	0% 1%	2% 4%	

# Percentage of diagnosis by route 2006-2010

2006-2010	Screen detected Two Week Wait GP referral Other Outpatient Inpatient Elective Emergency presentation Death Certificate Only Unknown														Number of cases
All Malignant Neoplasms (excl. NMSC)	5%	27%	27%	10%	3%	23%	0%	4%							1,272,584
Confidence interval	5% 5%	27% 27%	27% 27%	10% 10%	3% 3%	23% 23%	1% 1%	4% 4%							
Benign Cerebral Meningioma		0%	28%	19%	4%	45%	1%	3%							6,345
Confidence interval		0% 1%	27% 30%	18% 20%	3% 4%	44% 46%	1% 1%	3% 4%							
Benign Cranial Nerves		0%	50%	29%	4%	12%	0%	5%							1,869
Confidence interval		0% 1%	48% 52%	27% 32%	3% 5%	10% 13%	0% 1%	4% 6%							
Benign Pituitary		0%	42%	32%	4%	19%	0%	3%							3,161
Confidence interval		0% 0%	41% 44%	31% 34%	3% 5%	18% 20%	0% 1%	2% 3%							
Benign/Uncertain/Unknown behaviour Brain		0%	20%	15%	3%	58%	1%	3%							2,915
Confidence interval		0% 0%	19% 21%	14% 16%	3% 4%	56% 60%	1% 2%	2% 3%							
Malignant Brain		1%	15%	12%	5%	63%	0%	3%							19,284
Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%	62% 64%	0% 1%	3% 4%							
Other central nervous system - malignant		1%	26%	22%	5%	41%	1%	4%							1,257
Confidence interval		0% 1%	24% 29%	19% 24%	4% 6%	39% 44%	0% 2%	3% 6%							
Other central nervous system - non-invasive		0%	34%	22%	6%	35%	0%	3%							2,171
Confidence interval		0% 1%	33% 37%	20% 23%	5% 7%	33% 37%	0% 1%	2% 4%							

# Percentage of diagnosis by route 2006-2010

2006-2010	Screen detected Two Week Wait GP referral Other Outpatient Inpatient Elective Emergency presentation Death Certificate Only Unknown																Number of cases
All Malignant Neoplasms (excl. NMSC)	5%		27%		27%		10%		3%		23%		0%		4%		1,272,584
Confidence interval	5%	5%	27%	27%	27%	27%	10%	10%	3%	3%	23%	23%	1%	1%	4%	4%	
Benign Cerebral Meningioma			0%		28%		19%		4%		45%		1%		3%		6,345
Confidence interval			0%	1%	27%	30%	18%	20%	3%	4%	44%	46%	1%	1%	3%	4%	
Benign Cranial Nerves			0%		50%		29%		4%		12%		0%		5%		1,869
Confidence interval			0%	1%	48%	52%	27%	32%	3%	5%	10%	13%	0%	1%	4%	6%	
Benign Pituitary			0%		42%		32%		4%		19%		0%		3%		3,161
Confidence interval			0%	0%	41%	44%	31%	34%	3%	5%	18%	20%	0%	1%	2%	3%	
Benign/Uncertain/Unknown behaviour Brain			0%		20%		15%		3%		58%		1%		3%		2,915
Confidence interval			0%	0%	19%	21%	14%	16%	3%	4%	56%	60%	1%	2%	2%	3%	
Malignant Brain			1%		15%		12%		5%		63%		0%		3%		19,284
Confidence interval			1%	1%	15%	16%	12%	13%	4%	5%	62%	64%	0%	1%	3%	4%	
Other central nervous system - malignant			1%		26%		22%		5%		41%		1%		4%		1,257
Confidence interval			0%	1%	24%	29%	19%	24%	4%	6%	39%	44%	0%	2%	3%	6%	
Other central nervous system - non-invasive			0%		34%		22%		6%		35%		0%		3%		2,171
Confidence interval			0%	1%	33%	37%	20%	23%	5%	7%	33%	37%	0%	1%	2%	4%	

# Breakdowns - age

Malignant Brain		Screen detected	Two Week Wait	GP referral		Other Outpatient		Inpatient Elective	Emergency presentation		Death Certificate Only	Unknown	Number of cases
2006-2010	Under 50		1%	18%	18%	6%	52%	0%	4%				5,248
	Confidence interval		1% 1%	17% 19%	17% 19%	6% 7%	51% 53%	0% 1%	4% 5%				
	50-59		1%	14%	12%	6%	63%	0%	3%				3,180
	Confidence interval		1% 2%	13% 15%	11% 14%	5% 7%	61% 65%	0% 1%	3% 4%				
	60-69		1%	15%	12%	5%	64%	0%	3%				4,549
	Confidence interval		1% 2%	14% 16%	11% 13%	4% 6%	63% 66%	0% 1%	2% 3%				
	70-79		1%	15%	9%	3%	70%	0%	3%				3,999
	Confidence interval		1% 1%	14% 16%	8% 10%	2% 3%	68% 71%	0% 1%	2% 3%				
	80-84		0%	14%	7%	1%	74%	1%	3%				1,344
	Confidence interval		0% 1%	12% 16%	5% 8%	1% 2%	71% 76%	1% 2%	3% 5%				
	85+		1%	11%	6%	1%	77%	1%	3%				964
	Confidence interval		0% 2%	9% 13%	5% 8%	1% 2%	74% 79%	1% 2%	2% 5%				

# Breakdowns - age

Malignant Brain		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	Under 50		1%	18%	18%	6%	52%	0%	4%	5,248
	Confidence interval		1% 1%	17% 19%	17% 19%	6% 7%	51% 53%	0% 1%	4% 5%	
	50-59		1%	14%	12%	6%	63%	0%	3%	3,180
	Confidence interval		1% 2%	13% 15%	11% 14%	5% 7%	61% 65%	0% 1%	3% 4%	
	60-69		1%	15%	12%	5%	64%	0%	3%	4,549
	Confidence interval		1% 2%	14% 16%	11% 13%	4% 6%	63% 66%	0% 1%	2% 3%	
	70-79		1%	15%	9%	3%	70%	0%	3%	3,999
	Confidence interval		1% 1%	14% 16%	8% 10%	2% 3%	68% 71%	0% 1%	2% 3%	
	80-84		0%	14%	7%	1%	74%	1%	3%	1,344
	Confidence interval		0% 1%	12% 16%	5% 8%	1% 2%	71% 76%	1% 2%	3% 5%	
	85+		1%	11%	6%	1%	77%	1%	3%	964
	Confidence interval		0% 2%	9% 13%	5% 8%	1% 2%	74% 79%	1% 2%	2% 5%	



# Breakdowns - sex

Malignant Brain		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	Persons		1%	15%	12%	5%	63%	0%	3%	19,284
	Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%	62% 64%	0% 1%	3% 4%	
2006-2010	Male		1%	16%	13%	5%	62%	0%	3%	11,116
	Confidence interval		1% 1%	15% 16%	12% 14%	5% 5%	61% 63%	0% 1%	3% 4%	
	Female		1%	15%	12%	4%	65%	0%	3%	8,168
	Confidence interval		1% 1%	14% 16%	11% 12%	4% 5%	64% 66%	0% 1%	3% 4%	



# Breakdowns - sex

Malignant Brain		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	Persons		1%	15%	12%	5%	63%	0%	3%	19,284
	Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%	62% 64%	0% 1%	3% 4%	
2006-2010	Male		1%	16%	13%	5%	62%	0%	3%	11,116
	Confidence interval		1% 1%	15% 16%	12% 14%	5% 5%	61% 63%	0% 1%	3% 4%	
	Female		1%	15%	12%	4%	65%	0%	3%	8,168
	Confidence interval		1% 1%	14% 16%	11% 12%	4% 5%	64% 66%	0% 1%	3% 4%	

# Breakdowns - deprivation

Malignant Brain		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	1 (least deprived)		1%	15%	13%	6%	61%	0%	4%	4,230
	Confidence interval		1% 1%	14% 16%	12% 14%	5% 7%	60% 63%	0% 0%	3% 4%	
	2		1%	17%	12%	5%	62%	0%	3%	4,339
	Confidence interval		1% 1%	15% 18%	11% 13%	5% 6%	60% 63%	0% 1%	3% 4%	
	3		1%	15%	13%	4%	63%	1%	3%	4,034
	Confidence interval		1% 1%	14% 17%	12% 14%	4% 5%	61% 64%	0% 1%	3% 4%	
	4		1%	16%	12%	4%	64%	1%	3%	3,597
	Confidence interval		1% 1%	14% 17%	11% 13%	3% 4%	63% 66%	0% 1%	3% 4%	
	5 (most deprived)		1%	14%	11%	3%	67%	1%	3%	3,084
	Confidence interval		1% 1%	13% 15%	10% 12%	3% 4%	65% 69%	0% 1%	3% 4%	

# Breakdowns - deprivation

Malignant Brain		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	1 (least deprived)		1%	15%	13%	6%	61%	0%	4%	4,230
	Confidence interval		1% 1%	14% 16%	12% 14%	5% 7%	60% 63%	0% 0%	3% 4%	
	2		1%	17%	12%	5%	62%	0%	3%	4,339
	Confidence interval		1% 1%	15% 18%	11% 13%	5% 6%	60% 63%	0% 1%	3% 4%	
	3		1%	15%	13%	4%	63%	1%	3%	4,034
	Confidence interval		1% 1%	14% 17%	12% 14%	4% 5%	61% 64%	0% 1%	3% 4%	
	4		1%	16%	12%	4%	64%	1%	3%	3,597
	Confidence interval		1% 1%	14% 17%	11% 13%	3% 4%	63% 66%	0% 1%	3% 4%	
	5 (most deprived)		1%	14%	11%	3%	67%	1%	3%	3,084
	Confidence interval		1% 1%	13% 15%	10% 12%	3% 4%	65% 69%	0% 1%	3% 4%	

# Breakdowns - ethnicity

Malignant Brain		Screen detected	Two Week Wait	GP referral		Other Outpatient		Inpatient Elective		Emergency presentation		Death Certificate Only		Unknown	Number of cases
2006-2010	Asian		1%	13%	12%	5%		65%		1%	4%				520
	Confidence interval		0% 2%	10% 16%	9% 15%	4% 8%		61% 69%		0% 2%	3% 6%				
	Black			18%	10%	7%		61%			4%				247
	Confidence interval			14% 23%	7% 15%	5% 11%		55% 67%			2% 7%				
	White		1%	15%	13%	4%		64%		0%	3%				17,370
	Confidence interval		1% 1%	15% 16%	12% 13%	4% 5%		63% 65%		0% 0%	2% 3%				
	Other ethnic group		0%	14%	14%	5%		61%			5%				206
	Confidence interval		0% 3%	10% 20%	10% 20%	3% 9%		54% 68%			3% 9%				
	Unknown		1%	14%	8%	5%		49%		5%	18%				804
	Confidence interval		0% 2%	12% 17%	7% 11%	4% 6%		46% 53%		4% 7%	15% 20%				

# Breakdown *within* emergency route

2006-2010	Accident & Emergency	GP referral	Inpatient Emergency	Outpatient Emergency	Number of emergencies	Percent emergencies (of all cases)
All Malignant Neoplasms (excl. NMSC)	<b>61%</b>	<b>28%</b>	<b>3%</b>	<b>7%</b>	291,390	23%
Confidence interval	61% 62%	28% 28%	3% 3%	7% 8%		
Benign Cerebral Meningioma	<b>73%</b>	<b>18%</b>	<b>3%</b>	<b>6%</b>	2,838	45%
Confidence interval	71% 75%	17% 19%	2% 4%	5% 7%		
Benign Cranial Nerves	<b>58%</b>	<b>24%</b>	<b>2%</b>	<b>15%</b>	218	12%
Confidence interval	52% 65%	19% 30%	1% 5%	11% 21%		
Benign Pituitary	<b>58%</b>	<b>20%</b>	<b>3%</b>	<b>19%</b>	597	19%
Confidence interval	54% 62%	17% 23%	2% 4%	16% 23%		
Benign/Uncertain/Unknown behaviour Brain	<b>71%</b>	<b>22%</b>	<b>2%</b>	<b>4%</b>	1,685	58%
Confidence interval	69% 74%	21% 25%	2% 3%	3% 5%		
Malignant Brain	<b>73%</b>	<b>21%</b>	<b>3%</b>	<b>4%</b>	12,166	63%
Confidence interval	72% 73%	20% 21%	2% 3%	4% 5%		
Other central nervous system - malignant	<b>71%</b>	<b>17%</b>	<b>3%</b>	<b>9%</b>	521	41%
Confidence interval	67% 75%	14% 20%	2% 5%	7% 12%		
Other central nervous system - non-invasive	<b>71%</b>	<b>15%</b>	<b>3%</b>	<b>10%</b>	751	35%
Confidence interval	68% 75%	13% 18%	2% 4%	8% 13%		

# Breakdown *within* emergency route

2006-2010	Accident & Emergency	GP referral	Inpatient Emergency	Outpatient Emergency	Number of emergencies	Percent emergencies (of all cases)
All Malignant Neoplasms (excl. NMSC)	61%	28%	3%	7%	291,390	23%
Confidence interval	61% 62%	28% 28%	3% 3%	7% 8%		
Benign Cerebral Meningioma	73%	18%	3%	6%	2,838	45%
Confidence interval	71% 75%	17% 19%	2% 4%	5% 7%		
Benign Cranial Nerves	58%	24%	2%	15%	218	12%
Confidence interval	52% 65%	19% 30%	1% 5%	11% 21%		
Benign Pituitary	58%	20%	3%	19%	597	19%
Confidence interval	54% 62%	17% 23%	2% 4%	16% 23%		
Benign/Uncertain/Unknown behaviour Brain	71%	22%	2%	4%	1,685	58%
Confidence interval	69% 74%	21% 25%	2% 3%	3% 5%		
Malignant Brain	73%	21%	3%	4%	12,166	63%
Confidence interval	72% 73%	20% 21%	2% 3%	4% 5%		
Other central nervous system - malignant	71%	17%	3%	9%	521	41%
Confidence interval	67% 75%	14% 20%	2% 5%	7% 12%		
Other central nervous system - non-invasive	71%	15%	3%	10%	751	35%
Confidence interval	68% 75%	13% 18%	2% 4%	8% 13%		

# Percentage of diagnosis by route, Strategic Clinical Network, 2006-2010

Central Nervous System (incl brain) malignant		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	England		1%	16%	13%	5%	62%	0%	3%	20,541
	Confidence interval		1% 1%	16% 17%	13% 13%	4% 5%	61% 62%	0% 1%	3% 4%	
	Cheshire and Mersey		1%	16%	13%	4%	63%	0%	3%	951
	Confidence interval		0% 1%	13% 18%	11% 16%	3% 6%	60% 66%	0% 1%	2% 4%	
	East Midlands		1%	14%	12%	3%	69%	0%	2%	1,929
	Confidence interval		0% 1%	12% 15%	10% 13%	2% 4%	67% 71%	0% 0%	2% 3%	
	East of England		1%	19%	15%	5%	56%		4%	2,259
	Confidence interval		0% 1%	18% 21%	13% 16%	4% 6%	54% 59%		3% 5%	
	Greater Manchester Lancashire and South Cumbria		1%	14%	17%	7%	58%	1%	2%	1,728
	Confidence interval		1% 2%	13% 16%	15% 19%	6% 8%	56% 61%	0% 1%	2% 3%	
	London		1%	15%	12%	6%	58%	1%	7%	2,402
	Confidence interval		1% 1%	14% 17%	11% 13%	5% 7%	56% 60%	1% 2%	6% 8%	
	North East Cumbria and North Yorkshire		2%	17%	12%	4%	63%	0%	2%	1,328
	Confidence interval		1% 3%	15% 19%	10% 14%	3% 5%	60% 65%	0% 1%	2% 4%	
	South East Coast		0%	13%	11%	5%	64%	1%	6%	1,838
	Confidence interval		0% 1%	12% 15%	9% 12%	4% 6%	62% 67%	1% 1%	5% 7%	
	South West		1%	18%	15%	4%	60%	1%	2%	2,031
	Confidence interval		1% 2%	16% 20%	13% 16%	3% 5%	58% 63%	0% 1%	1% 2%	
	Thames Valley		1%	13%	14%	4%	65%	0%	3%	796
	Confidence interval		1% 2%	11% 15%	12% 16%	3% 5%	62% 68%	0% 1%	2% 5%	
	Wessex		1%	18%	21%	4%	53%	0%	2%	1,171
	Confidence interval		1% 2%	16% 20%	19% 24%	3% 6%	50% 56%	0% 1%	2% 3%	
	West Midlands		1%	18%	10%	5%	62%	1%	3%	1,993
	Confidence interval		1% 2%	17% 20%	9% 12%	4% 6%	60% 64%	0% 1%	2% 4%	
	Yorkshire and the Humber		1%	15%	8%	3%	70%	0%	3%	2,115
	Confidence interval		1% 2%	13% 16%	7% 9%	2% 4%	68% 72%	0% 1%	2% 4%	

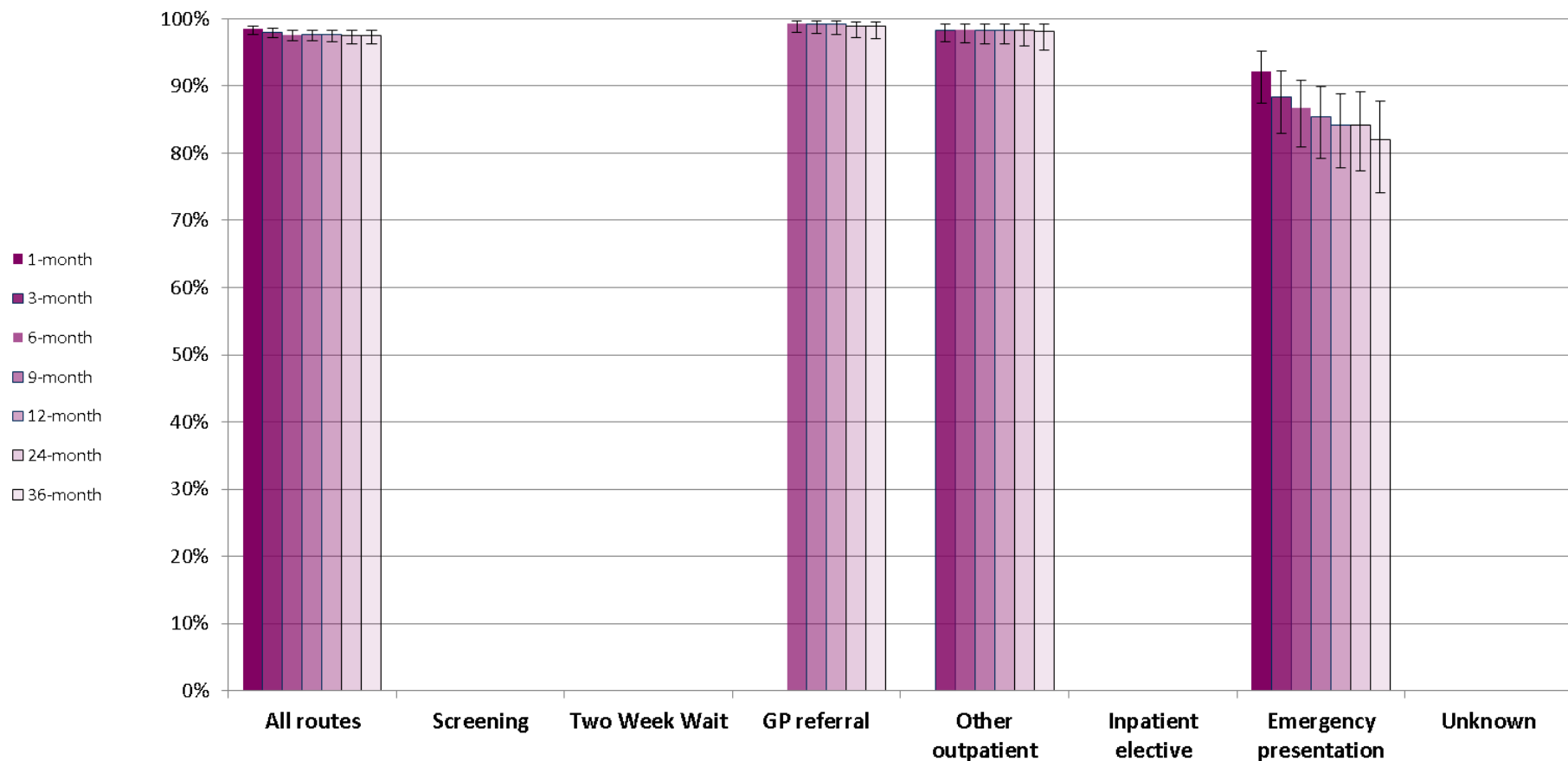
# Percentage of diagnosis by route, Strategic Clinical Network, 2006-2010

Central Nervous System (incl brain) malignant		Screen detected	Two Week Wait	GP referral	Other Outpatient	Inpatient Elective	Emergency presentation	Death Certificate Only	Unknown	Number of cases
2006-2010	England		1%	16%	13%	5%	62%	0%	3%	20,541
	Confidence interval		1% 1%	16% 17%	13% 13%	4% 5%	61% 62%	0% 1%	3% 4%	
	Cheshire and Mersey		1%	16%	13%	4%	63%	0%	3%	951
	Confidence interval		0% 1%	13% 18%	11% 16%	3% 6%	60% 66%	0% 1%	2% 4%	
	East Midlands		1%	14%	12%	3%	69%	0%	2%	1,929
	Confidence interval		0% 1%	12% 15%	10% 13%	2% 4%	67% 71%	0% 0%	2% 3%	
	East of England		1%	19%	15%	5%	56%		4%	2,259
	Confidence interval		0% 1%	18% 21%	13% 16%	4% 6%	54% 59%		3% 5%	
	Greater Manchester Lancashire and South Cumbria		1%	14%	17%	7%	58%	1%	2%	1,728
	Confidence interval		1% 2%	13% 16%	15% 19%	6% 8%	56% 61%	0% 1%	2% 3%	
	London		1%	15%	12%	6%	58%	1%	7%	2,402
	Confidence interval		1% 1%	14% 17%	11% 13%	5% 7%	56% 60%	1% 2%	6% 8%	
	North East Cumbria and North Yorkshire		2%	17%	12%	4%	63%	0%	2%	1,328
	Confidence interval		1% 3%	15% 19%	10% 14%	3% 5%	60% 65%	0% 1%	2% 4%	
	South East Coast		0%	13%	11%	5%	64%	1%	6%	1,838
	Confidence interval		0% 1%	12% 15%	9% 12%	4% 6%	62% 67%	1% 1%	5% 7%	
	South West		1%	18%	15%	4%	60%	1%	2%	2,031
	Confidence interval		1% 2%	16% 20%	13% 16%	3% 5%	58% 63%	0% 1%	1% 2%	
	Thames Valley		1%	13%	14%	4%	65%	0%	3%	796
	Confidence interval		1% 2%	11% 15%	12% 16%	3% 5%	62% 68%	0% 1%	2% 5%	
	Wessex		1%	18%	21%	4%	53%	0%	2%	1,171
	Confidence interval		1% 2%	16% 20%	19% 24%	3% 6%	50% 56%	0% 1%	2% 3%	
	West Midlands		1%	18%	10%	5%	62%	1%	3%	1,993
	Confidence interval		1% 2%	17% 20%	9% 12%	4% 6%	60% 64%	0% 1%	2% 4%	
	Yorkshire and the Humber		1%	15%	8%	3%	70%	0%	3%	2,115
	Confidence interval		1% 2%	13% 16%	7% 9%	2% 4%	68% 72%	0% 1%	2% 4%	



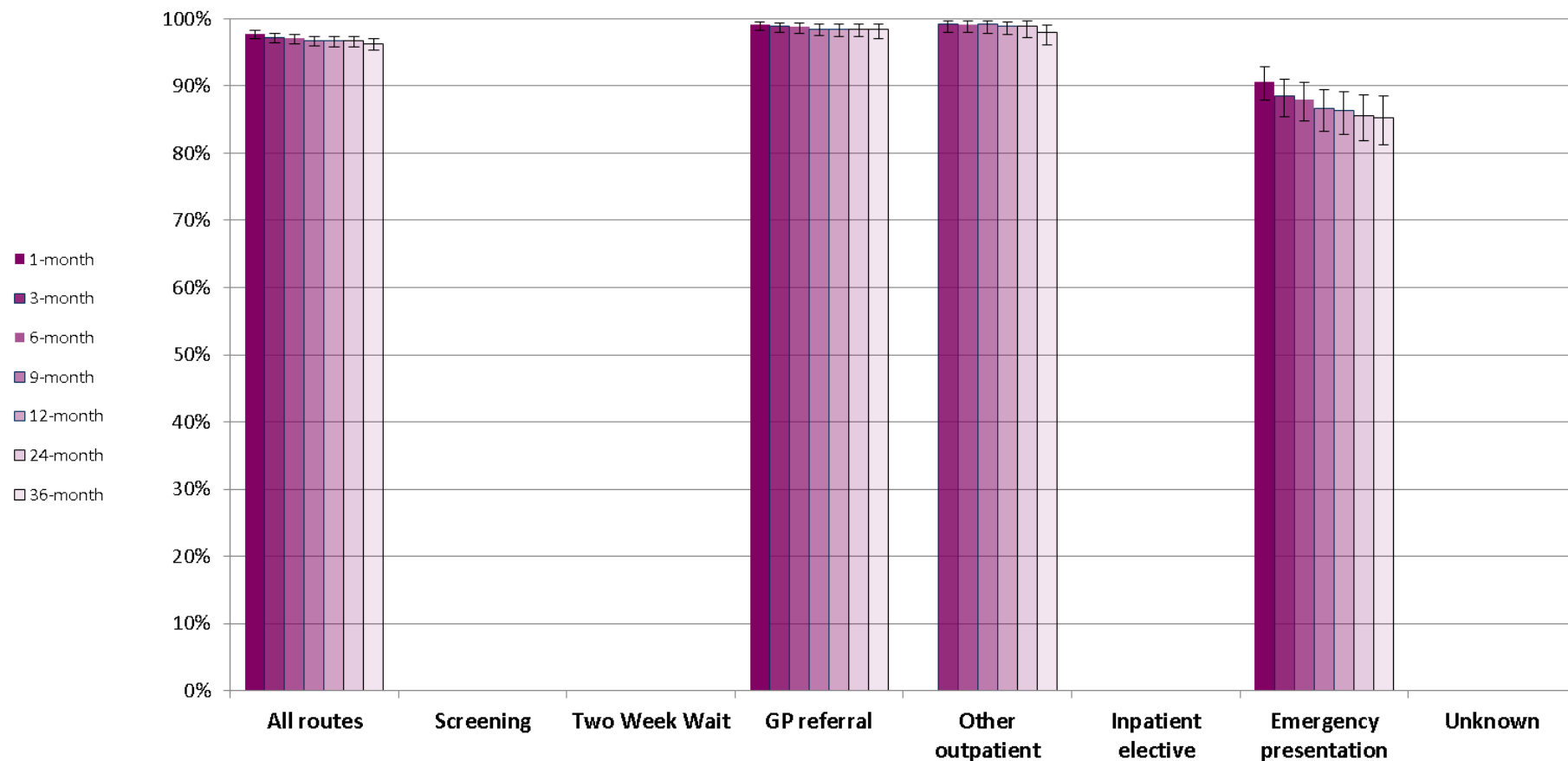
# Benign Cranial Nerves - survival

**Relative survival estimates by presentation route and survival time, Benign Cranial Nerves, 2006-2010**



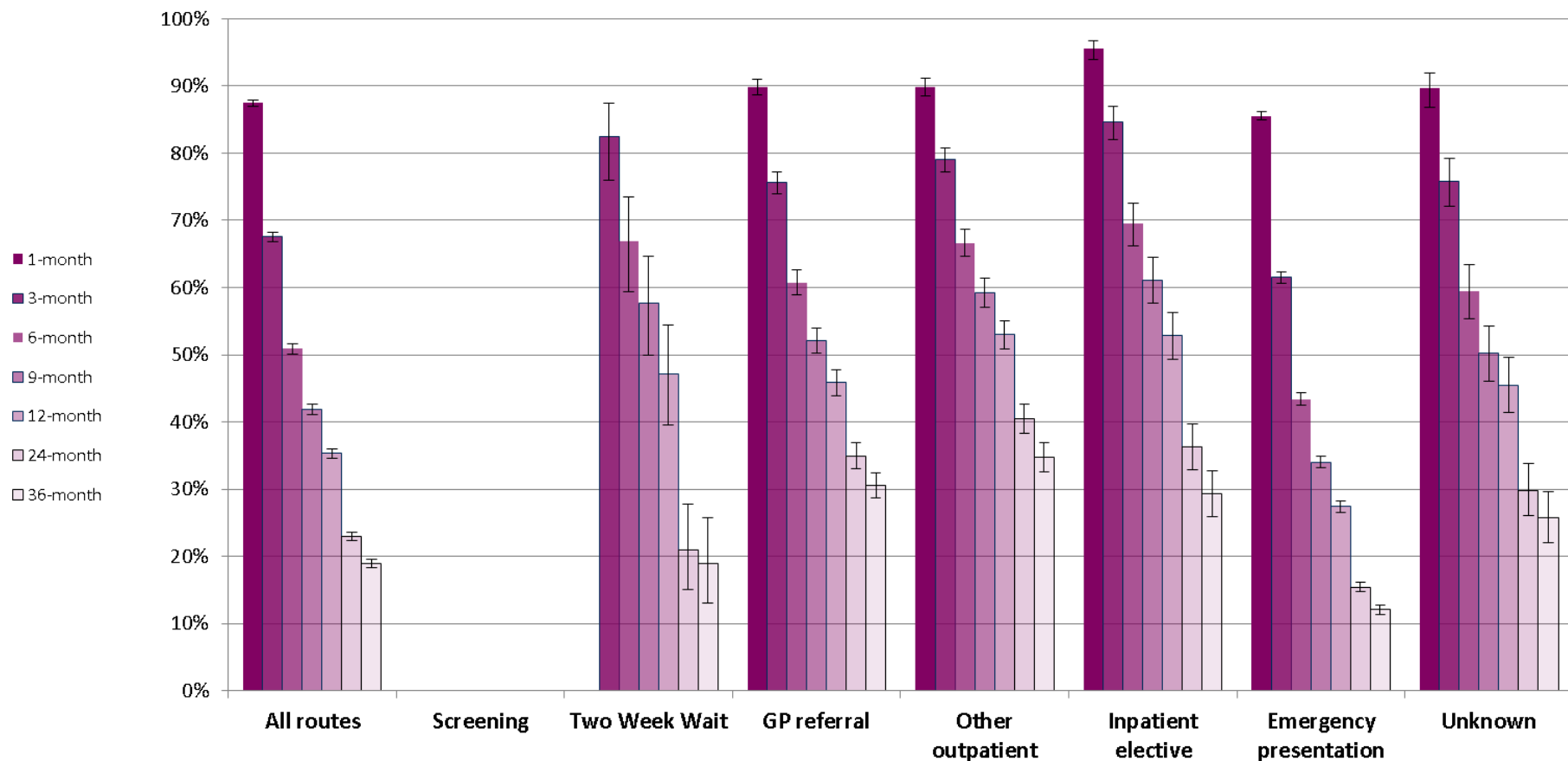
# Benign Pituitary - survival

**Relative survival estimates by presentation route and survival time,  
Benign Pituitary, 2006-2010**



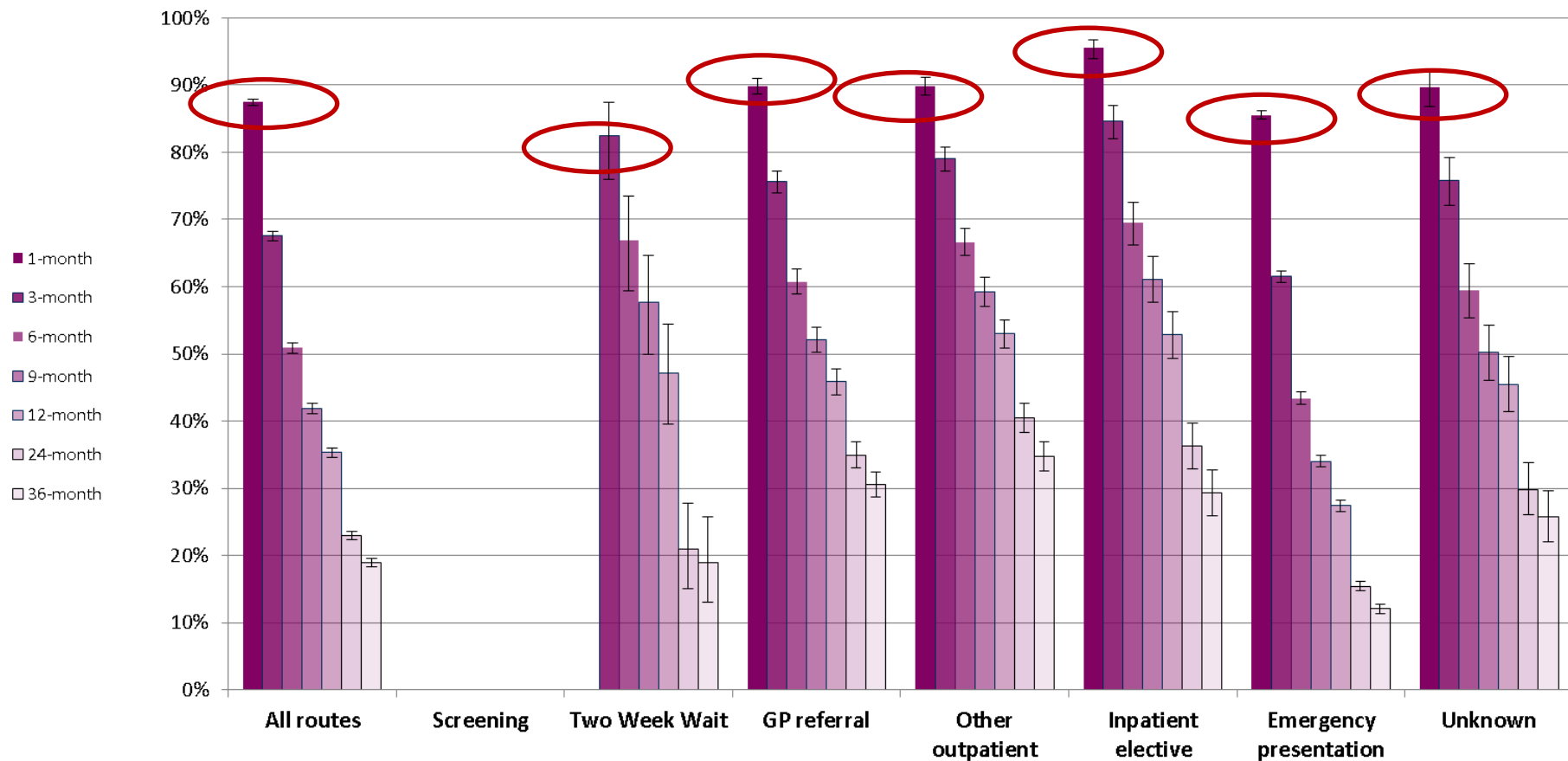
# Malignant Brain - survival

**Relative survival estimates by presentation route and survival time,  
Malignant Brain, 2006-2010**



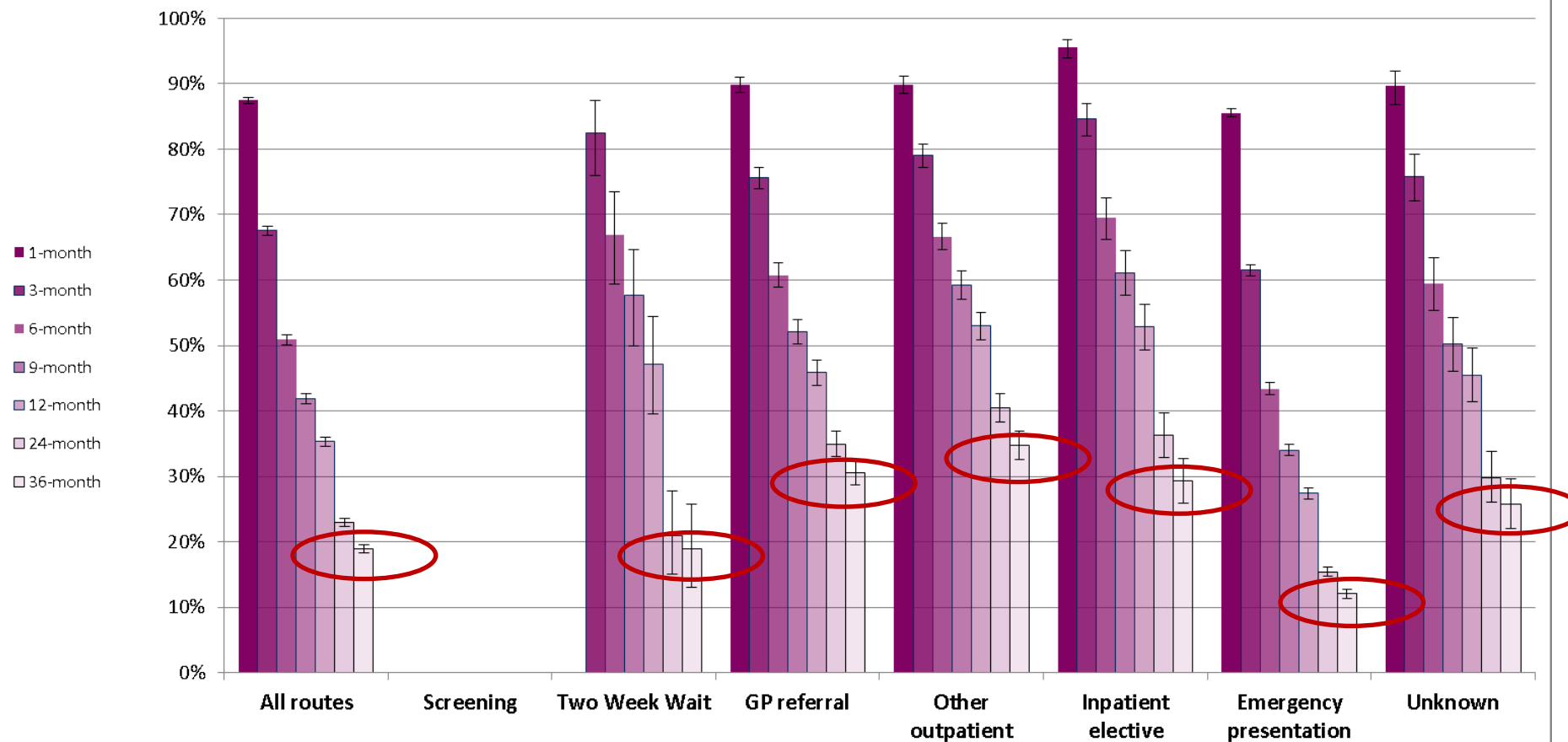
# Malignant Brain - survival

**Relative survival estimates by presentation route and survival time,  
Malignant Brain, 2006-2010**



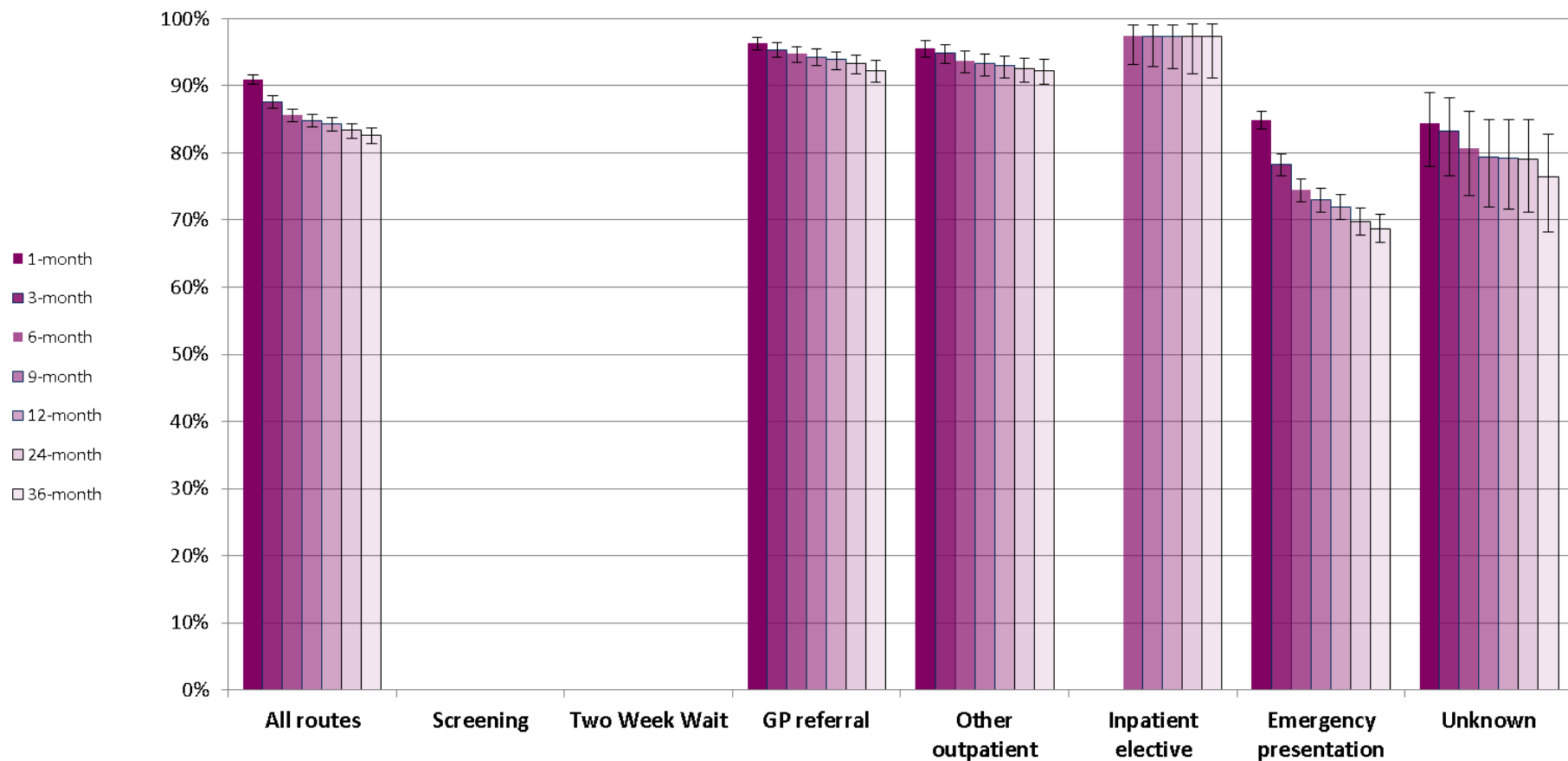
# Malignant Brain - survival

**Relative survival estimates by presentation route and survival time, Malignant Brain, 2006-2010**



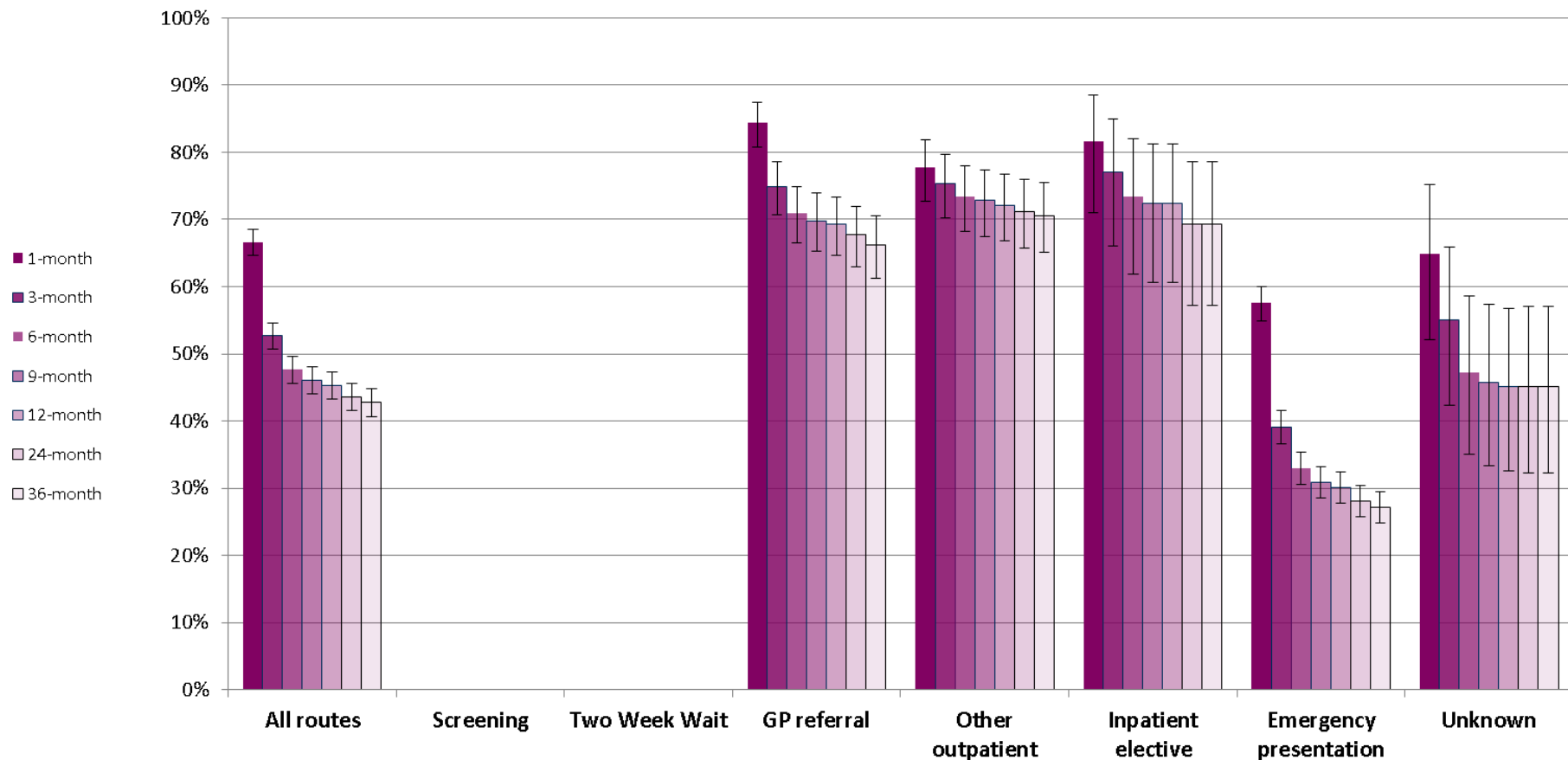
# Benign Cerebral Meningioma - survival

**Relative survival estimates by presentation route and survival time, Benign Cerebral Meningioma, 2006-2010**



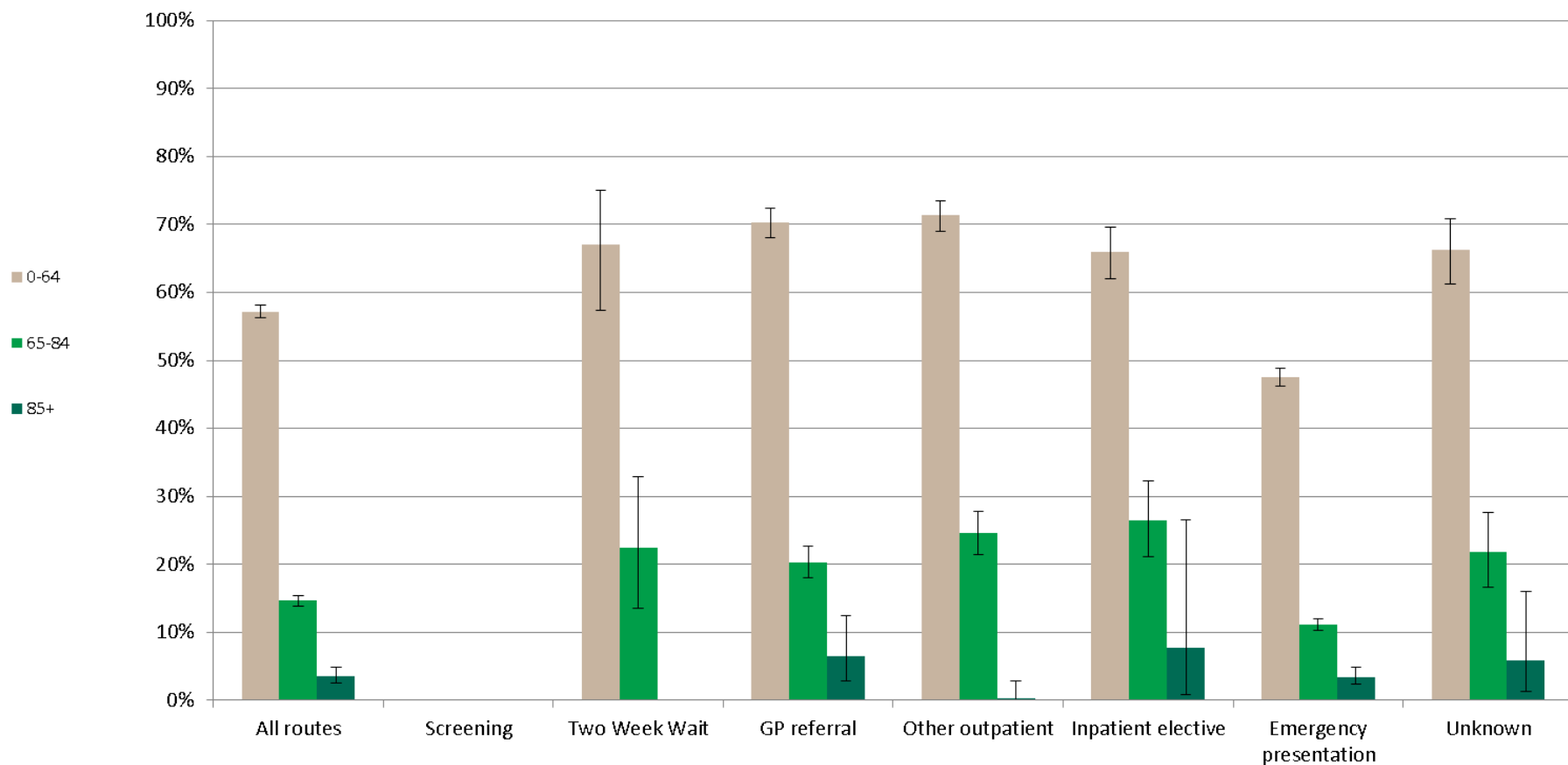
# Benign/Uncertain/Unknown behaviour Brain - survival

**Relative survival estimates by presentation route and survival time, Benign/Uncertain/Unknown behaviour Brain, 2006-2010**



# Survival breakdowns - age

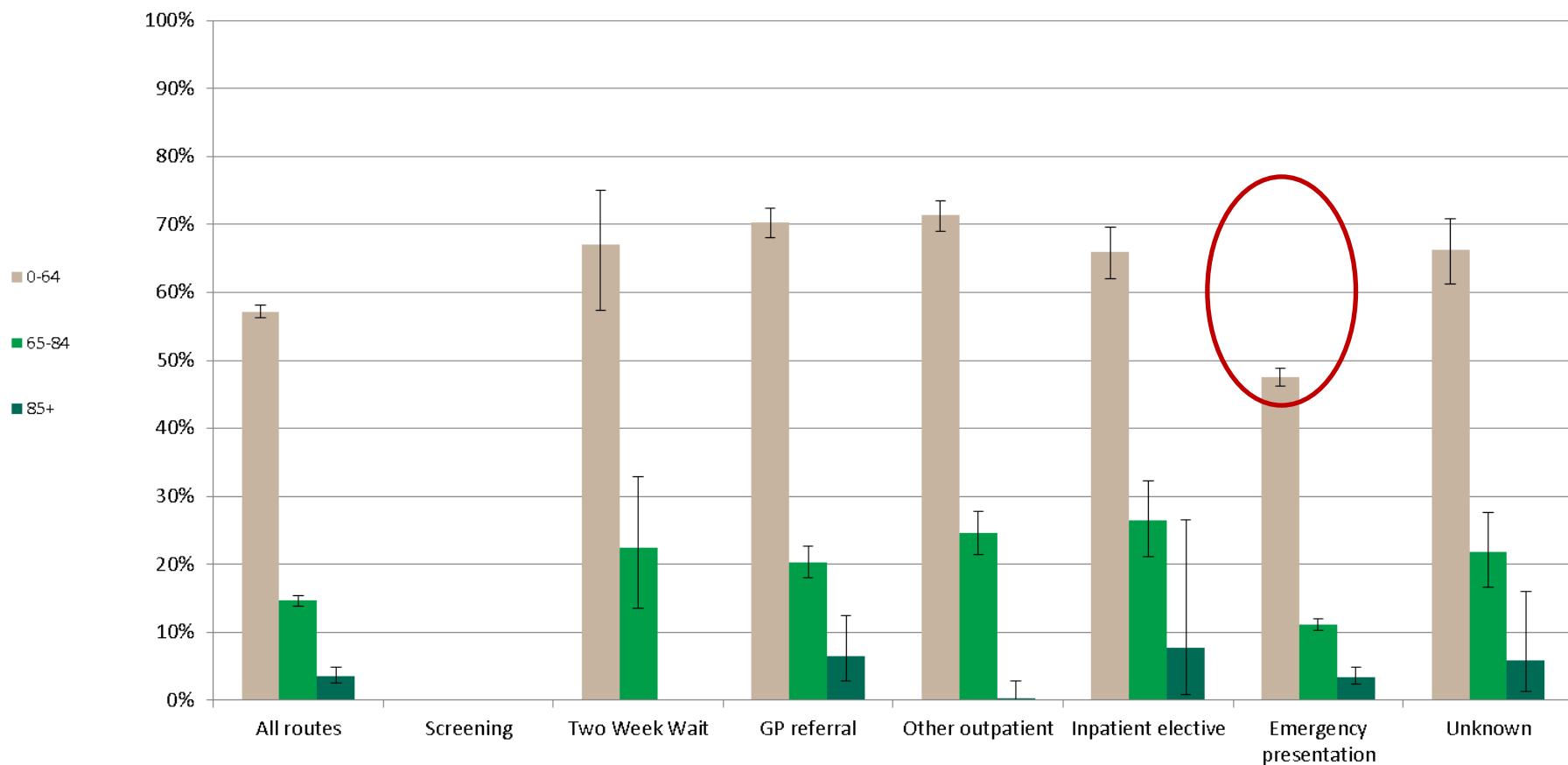
**12-month relative survival estimates by presentation route,  
Central Nervous System (incl brain) malignant, 2006-2010, by age**





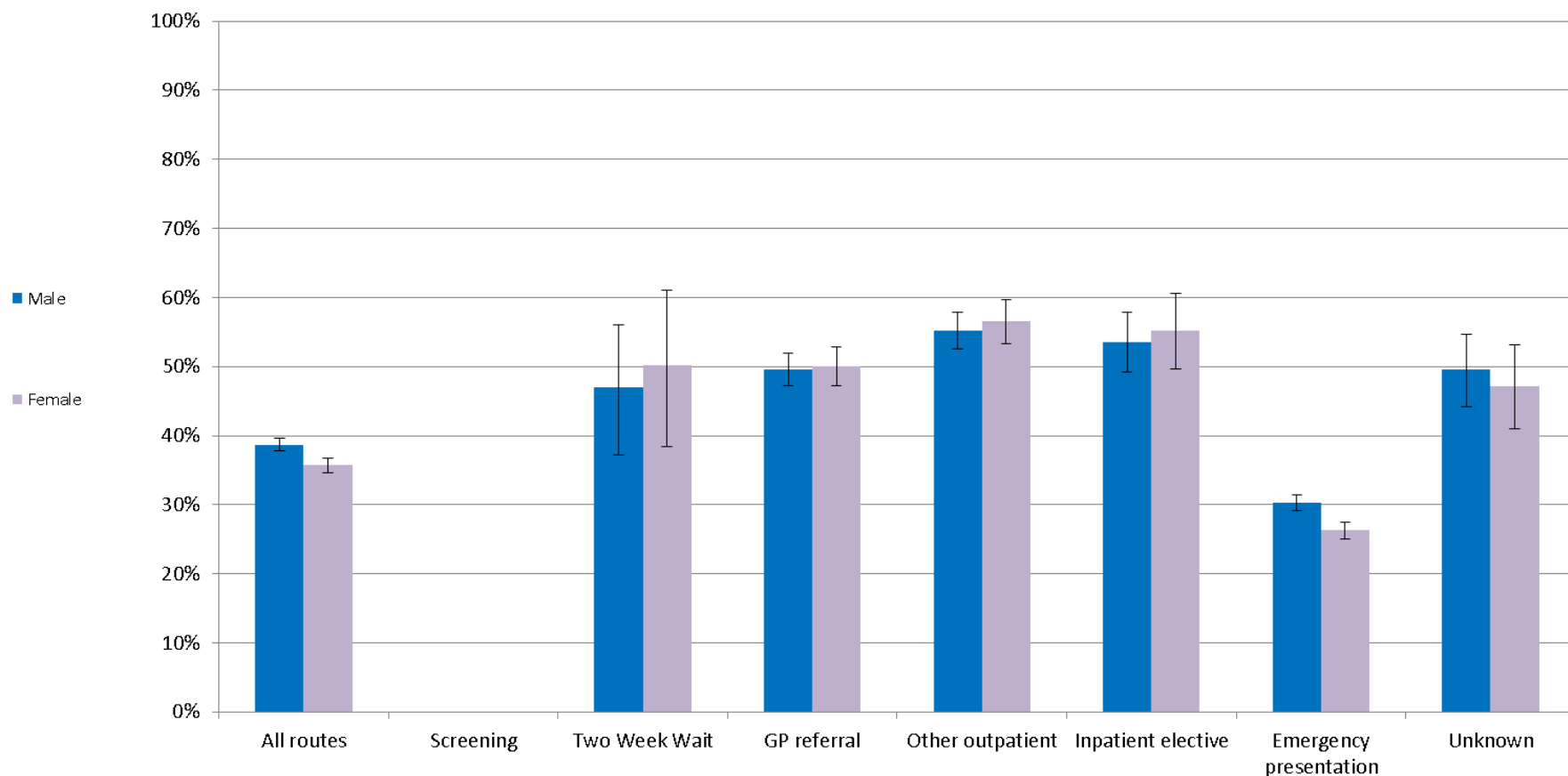
# Survival breakdowns - age

**12-month relative survival estimates by presentation route,  
Central Nervous System (incl brain) malignant, 2006-2010, by age**



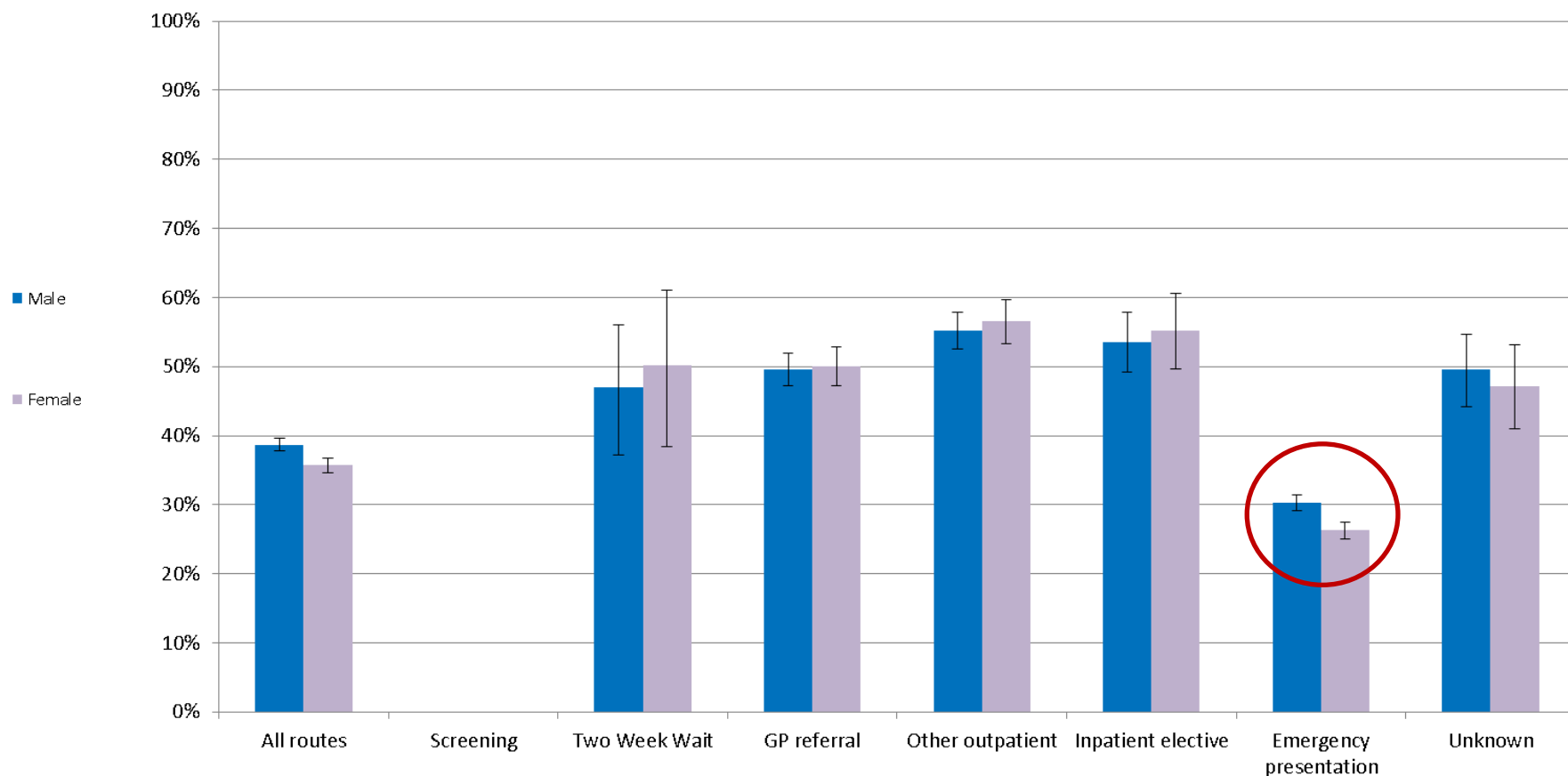
# Survival breakdowns - sex

**12-month relative survival estimates by presentation route,  
Central Nervous System (incl brain) malignant, 2006-2010, by sex**



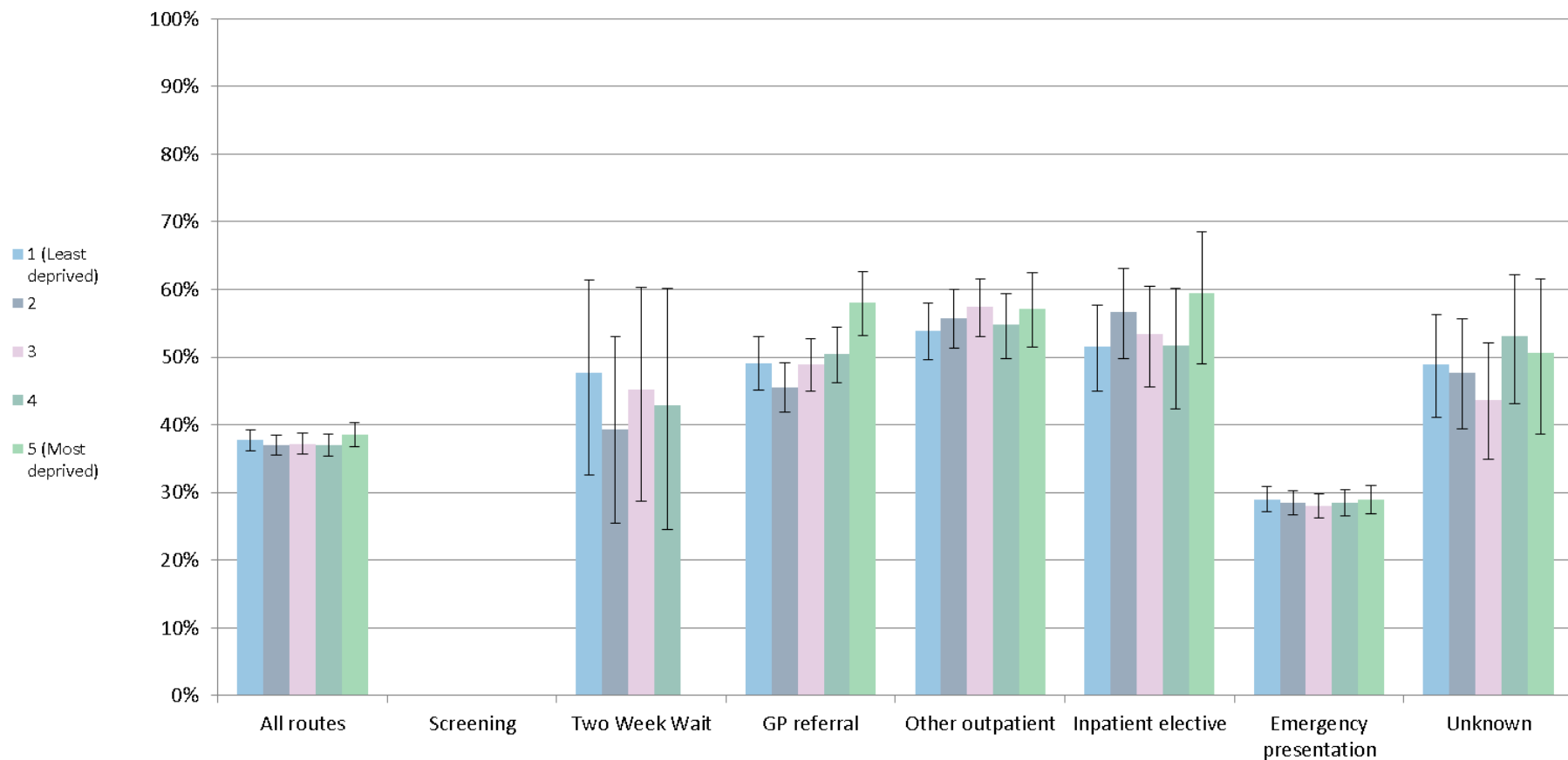
# Survival breakdowns - sex

**12-month relative survival estimates by presentation route,  
Central Nervous System (incl brain) malignant, 2006-2010, by sex**



# Survival breakdowns - deprivation

**12-month relative survival estimates by presentation route, Central Nervous System (incl brain) malignant, 2006-2010, by deprivation quintile**



# Summary

- TWW referrals play almost no part
- Varying, but generally high, emergency presentations (EP)
- Generally higher 'ill-defined' routes
- Increasing EPs with age, deprivation, for females
- Observed geographic variation in proportion of EPs
- Malignant brain tumours EP appear to have a long term survival impact
- Survival impact larger in younger persons

# Application of Routes to Diagnosis

- Understand the different routes for different cancer sites
- Build a picture for each cancer site
- Explore possible reasons for delayed diagnosis
- Direct the focus of early diagnosis initiatives
  - Awareness campaigns
  - Targeted interventions
  - Monitoring and evaluating impact
- Identify areas for further research
  - Link to GP audit and GP data
  - Routes from diagnosis
  - Exploring emergency presentations
- Patient-level Routes are available to PHE analysts for further investigation

For more information, please contact:

[enquiries@ncin.org.uk](mailto:enquiries@ncin.org.uk)