

Trends in Brain Tumour Referrals

Oct 2007 to April 2012

JCUH and NGH

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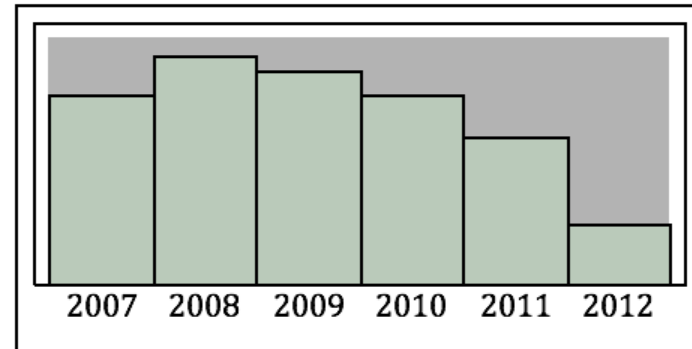
Data source

- MS Access database maintained at both referral centers
- Contemporaneous data entry by on-call registrar
- Database has both dropdown and free-text modes
- Records checked before analysis for accuracy
- Analysed with JMP 8.0.2
- Four year trends presented
- Aug 2008 – May 2011 NGH and Aug 2007 – Mar 2012 JCUH

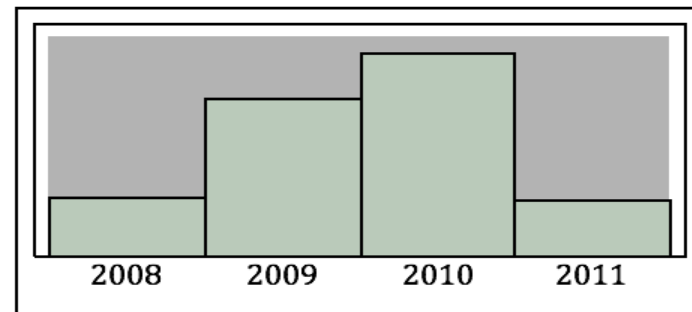
Number of Referrals

Year	JCUH Tumors	NGH Tumors
2007	152	0
2008	184	133
2009	174	373
2010	154	476
2011	118	126
2012	47	0
	829	1108

JCUH



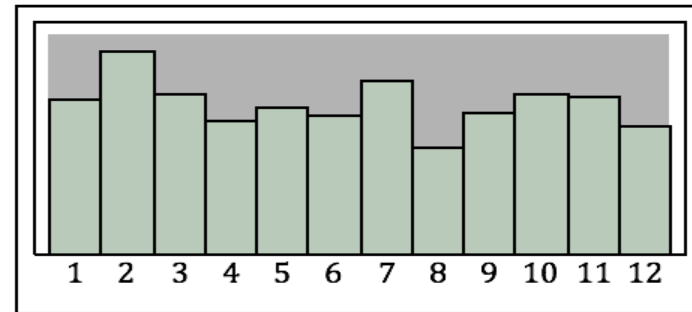
NGH



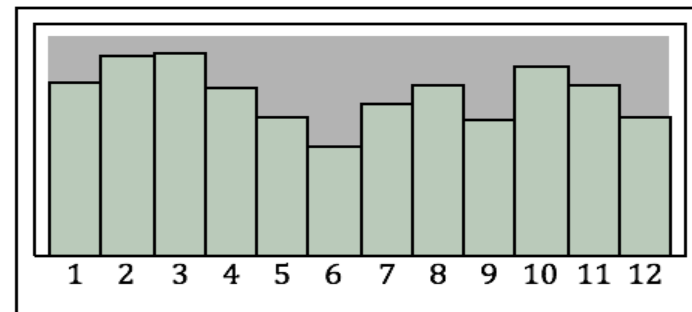
Tumour referrals by month

Month	JCUH	NGH
1	71	99
2	93	114
3	74	115
4	61	96
5	67	79
6	64	62
7	80	86
8	49	97
9	65	77
10	74	108
11	72	97
12	59	78
Total	829	1108

JCUH



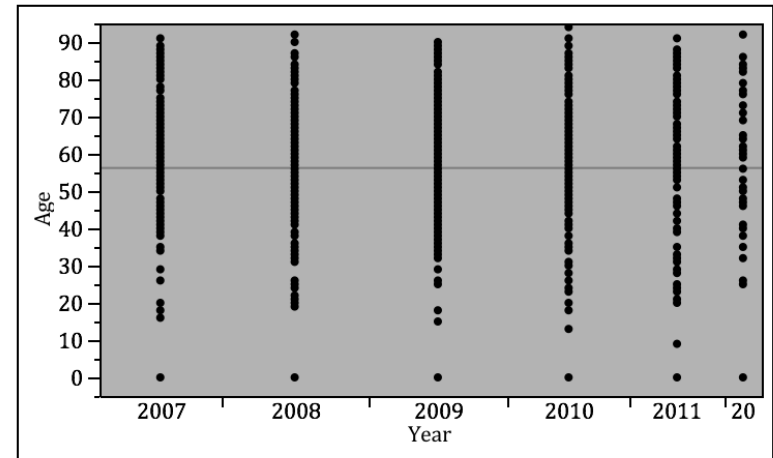
NGH



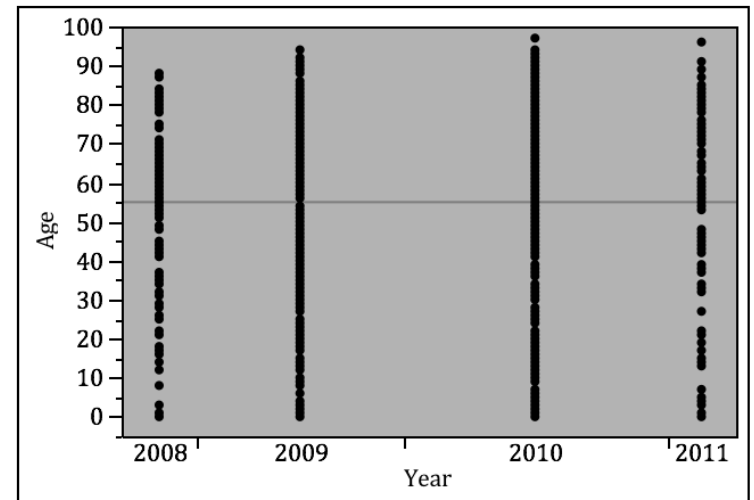
Mean age of referrals by year (2011 and 2012 are significantly lower, ANOVA, $p=0.0105$)

Level	Mean Age JCUH	Mean
2007	57.6579	
2008	58.2283	54.0000
2009	59.7011	55.0410
2010	60.7582	56.0128
2011	47.7373	51.9431
2012	51.1489	
	Prob>F 0.0105	Prob>F 0.38

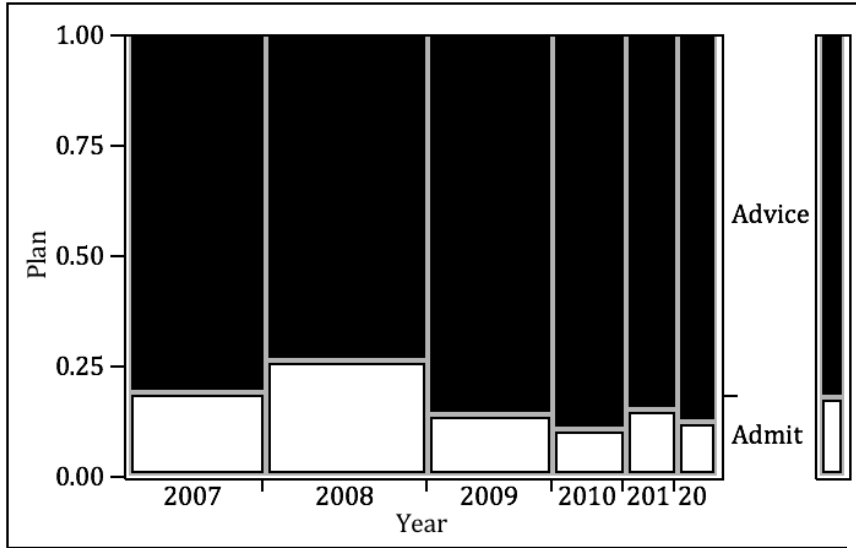
JCUH



NGH

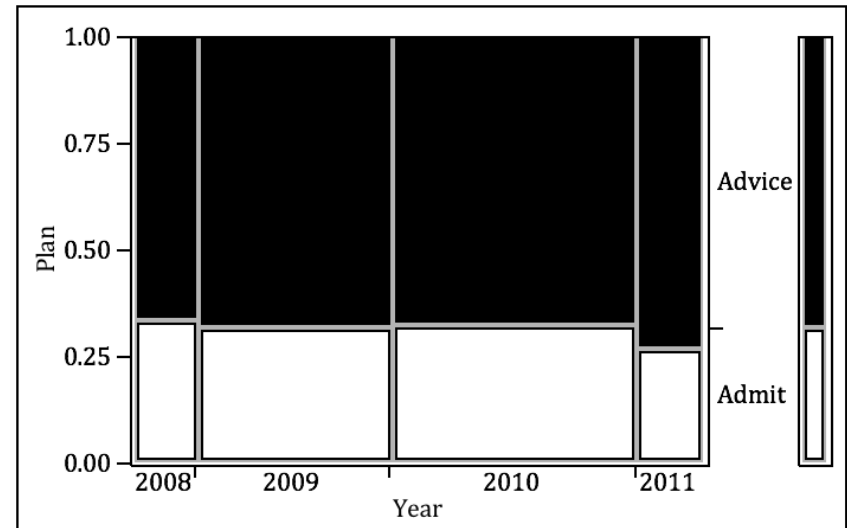


Admit/Advice trends over the years

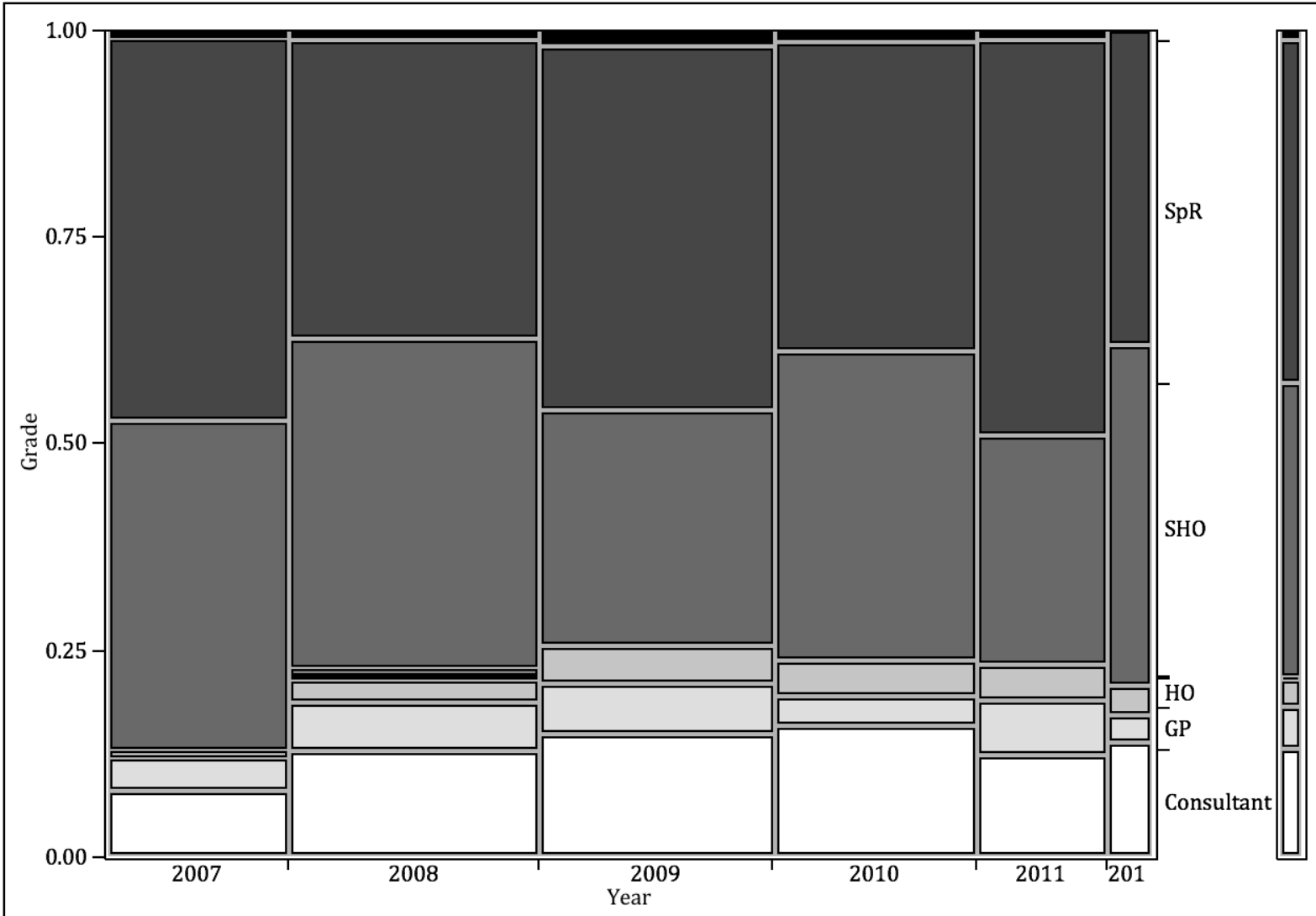


JCUH

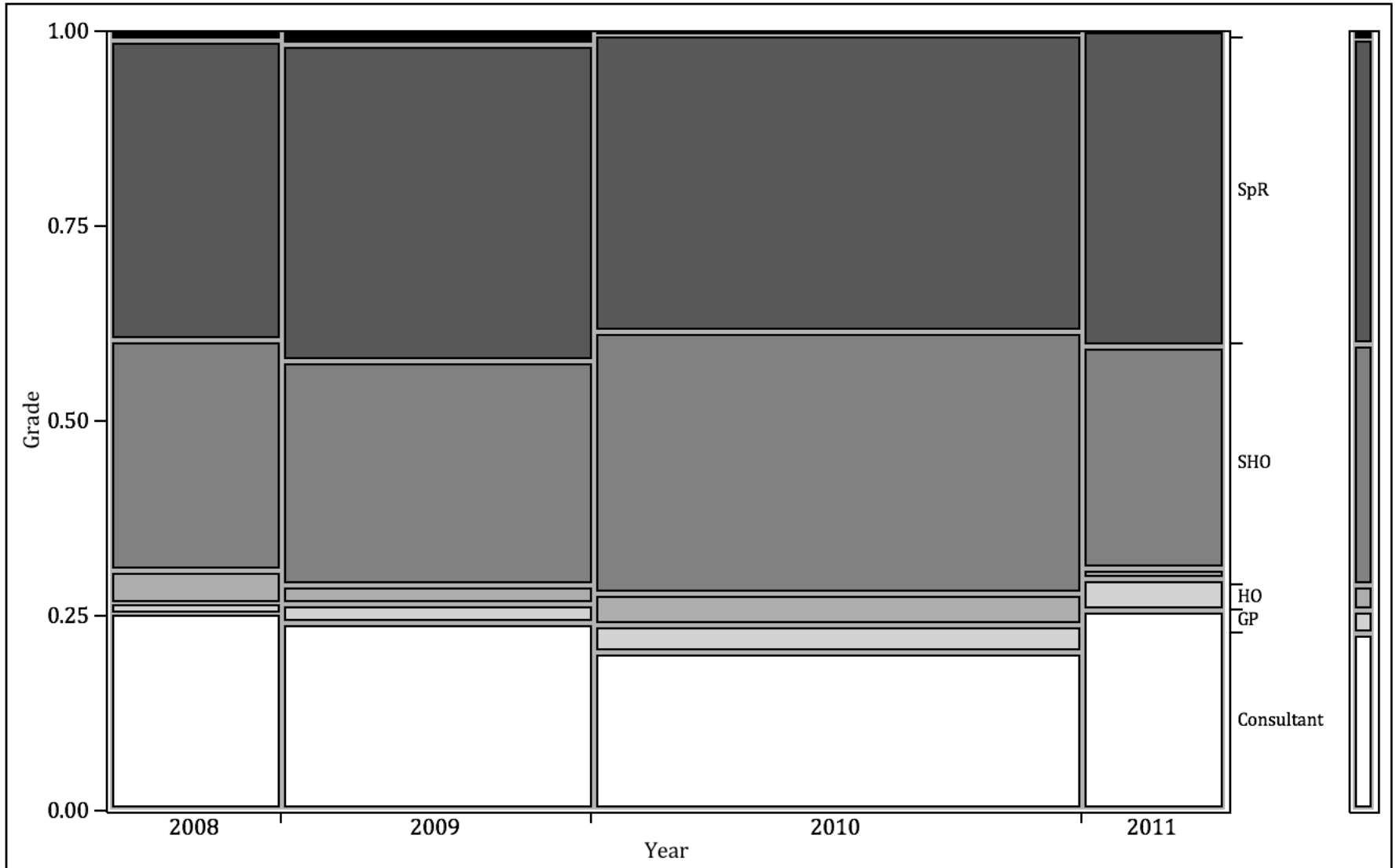
NGH



Grade of referring physician by year - JCUH



Grade of referring physician by



Referrals by specialty over the years

JCUH

Speciality	2007	2008	2009	2010	2011	2012
Medicine	83	117	117	95	50	12
A&E	17	22	16	20	22	7
GP	4	9	13	4	5	2
Neurology	4	7	3	1	3	0
EYE	1	3	3	3	1	1
COTE	0	1	1	2	1	1
Psych	1	0	1	2	0	1
Radiology	0	1	3	1	0	0
Surgery	2	1	0	1	1	0
NS	0	1	2	0	1	0
Cardiology	0	0	0	2	1	0
Ortho	1	1	0	0	0	1
ENT	0	0	0	0	0	1
ITU	0	0	0	0	1	0
Max-Fax	0	1	0	0	0	0

Referrals by specialty over the years NGH

Speciality	2008	2009	2010	2011
Medicine	59	130	144	32
A&E	13	62	90	19
Paediatrics	3	21	38	18
GP	4	12	16	4
Other	10	8	10	0
Neurology	4	6	14	1
Oncology	3	4	10	5
Surgery	3	3	6	2
Stroke	0	3	4	3
Ophthalmology	1	4	2	2
Orthopaedics	1	5	1	0
Psychiatry	1	2	3	1
ENT	1	0	2	1
Anaesthetics	0	2	0	1
Neurosurgery	0	0	0	2
Rehab	0	1	0	1

Referral by hospital over the years

JCUH

Referring Hospital	2008	2009	2010	2007	2011	2012
JCUH	70	61	54	65	38	14
North Tees	34	23	24	27	34	7
Darlington Memorial	13	25	32	11	23	15
Hartlepool	15	23	15	21	6	4
Friarage	11	11	14	9	5	1
Bishop Auckland	24	12	0	11	0	1
GP	11	11	5	5	8	3
Other	6	6	4	1	0	0
Durham	0	0	4	0	2	1
RVI	0	0	0	0	1	1
Sunderland	0	1	0	0	1	0

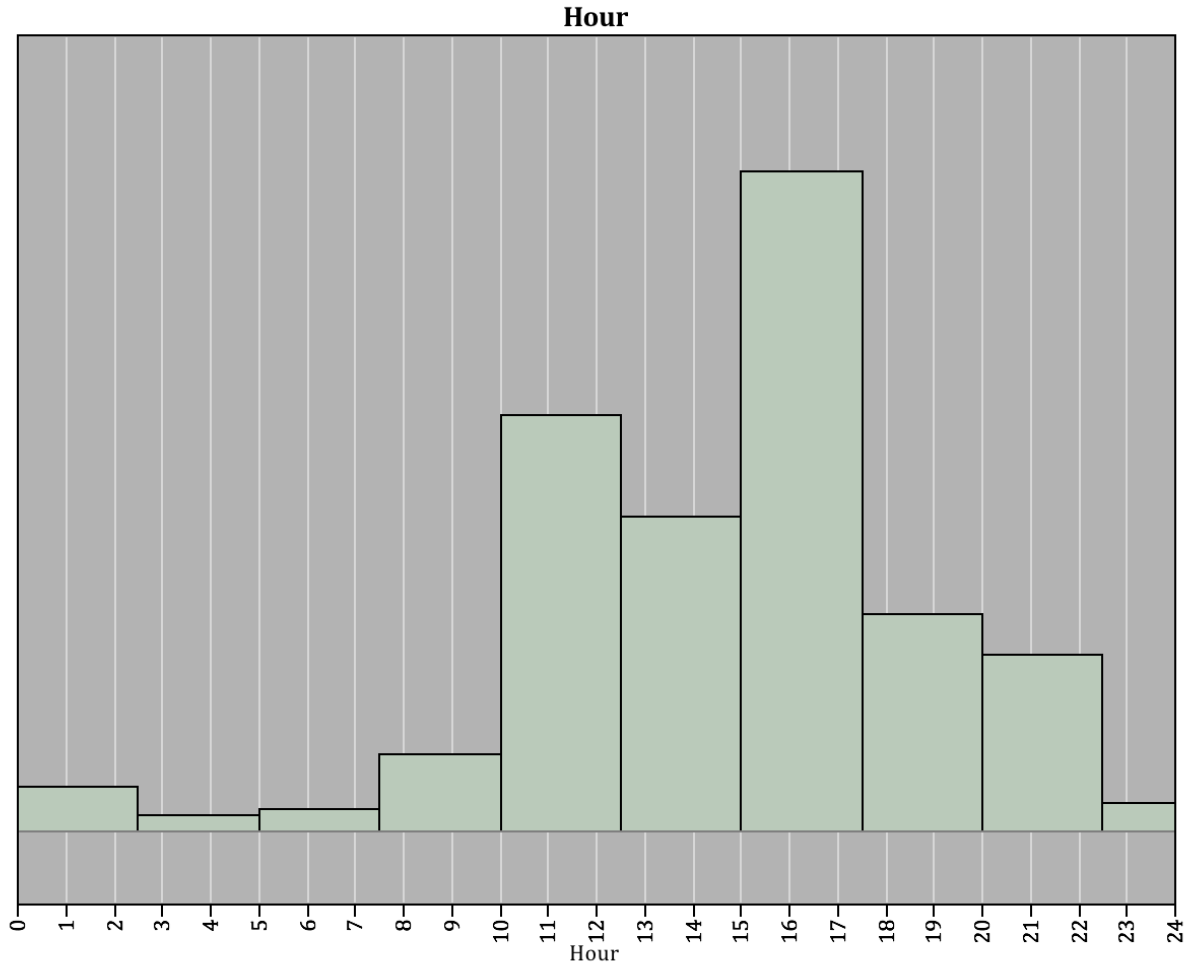
Referral by hospital over the years

NGH

ReferringHospital	2008	2009	2010	2011
NUTH	32	90	142	33
Sunderland	23	48	58	18
Durham	14	41	41	13
QE	7	32	33	12
North Tyneside	7	26	37	8
Carlisle	7	26	34	7
South Tyneside	13	21	34	6
Wansbeck	7	26	30	10
GP	8	20	21	5
White Haven	7	21	14	5
Other	3	9	13	4
Hexham	3	5	8	2
Darlington	0	1	2	1
JCUH	0	1	1	1
Hartlepool	0	0	1	0
Nurse	0	1	0	0

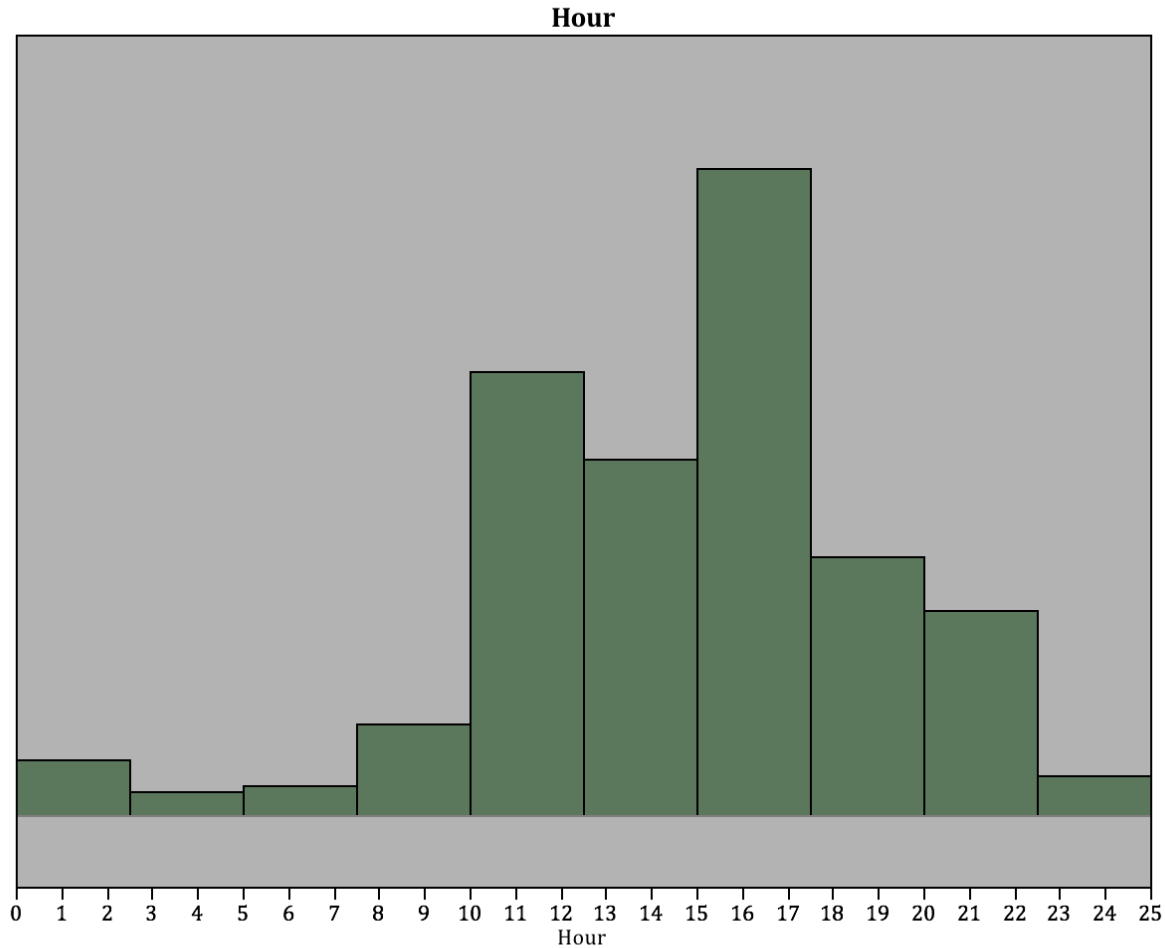
Referral by hour (cumulative data)

JCUH

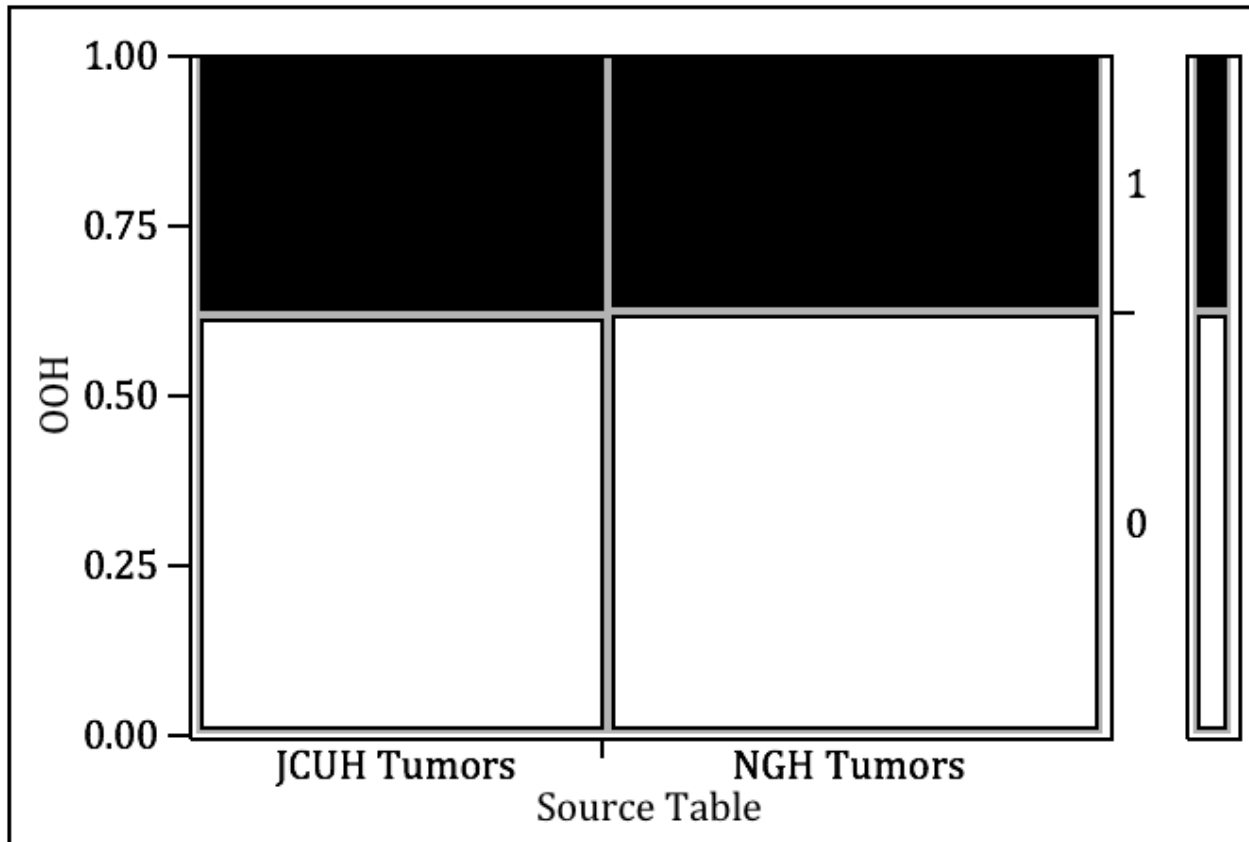


Referral by hour (cumulative data)

NGH



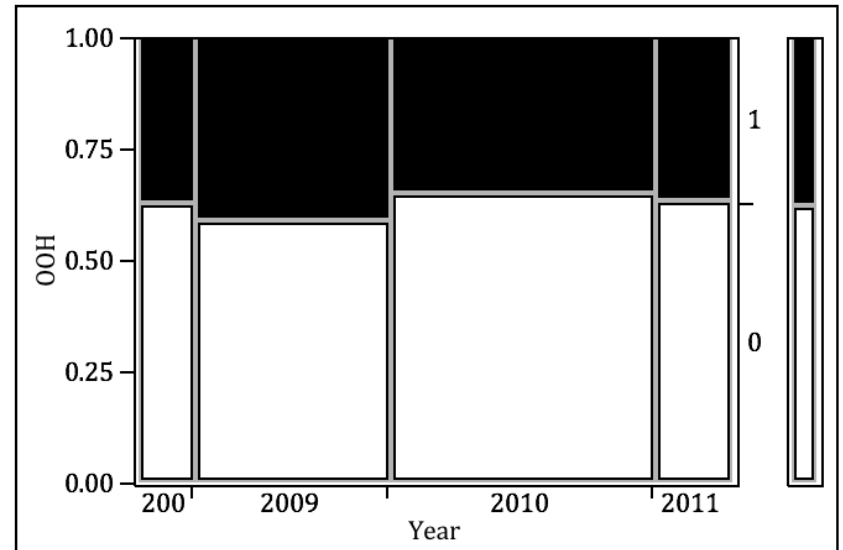
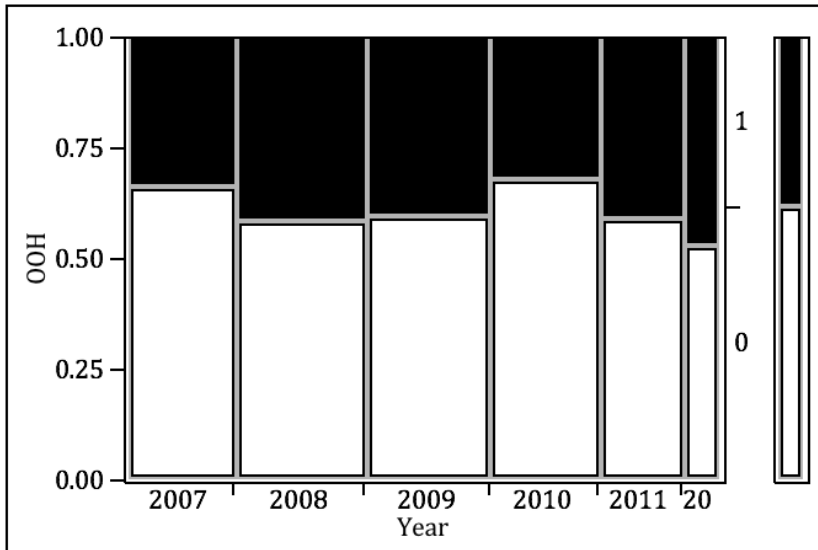
Out of hours referrals



OOH referrals over years

JCUH trend (chi sq p 0.22)

NGH trend (chi sq p 0.39)



Trends of OOH referrals over years

(stratified by other factors, Cochran-Maentel-Haenszel Analysis p – values)

Stratifying factor	JCUH	NGH
Referring Hospital	0.51	**
Referring Specialty	0.81	0.05
Grade of referring	0.20	0.50
Plan	0.51	0.84

Conclusions

- No clear discernable trend on whether the numbers have increased or decreased (? Data error)
- Age of tumours referrals at JCUH lower over last 2 years
- Local/Parent trust and Medicine biggest source of referrals – change for NGH due to move is seen
- Greater concentration of referrals at 5pm