Warwick Statistics Open day June 2021

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University of Warwick

Department of Statistics

What I will discuss today

Student projects Past

- Covid-19 and obesity
- Nausea and vomiting in pregnancy
- Statistics in Anglo-Saxon Archeology

Student projects Future

- Modelling vehicle repair counts for in-service times beyond the warranty period
- Exploring the relationship between active travel and pollution levels in London
- Air Quality at the University of Warwick campus.

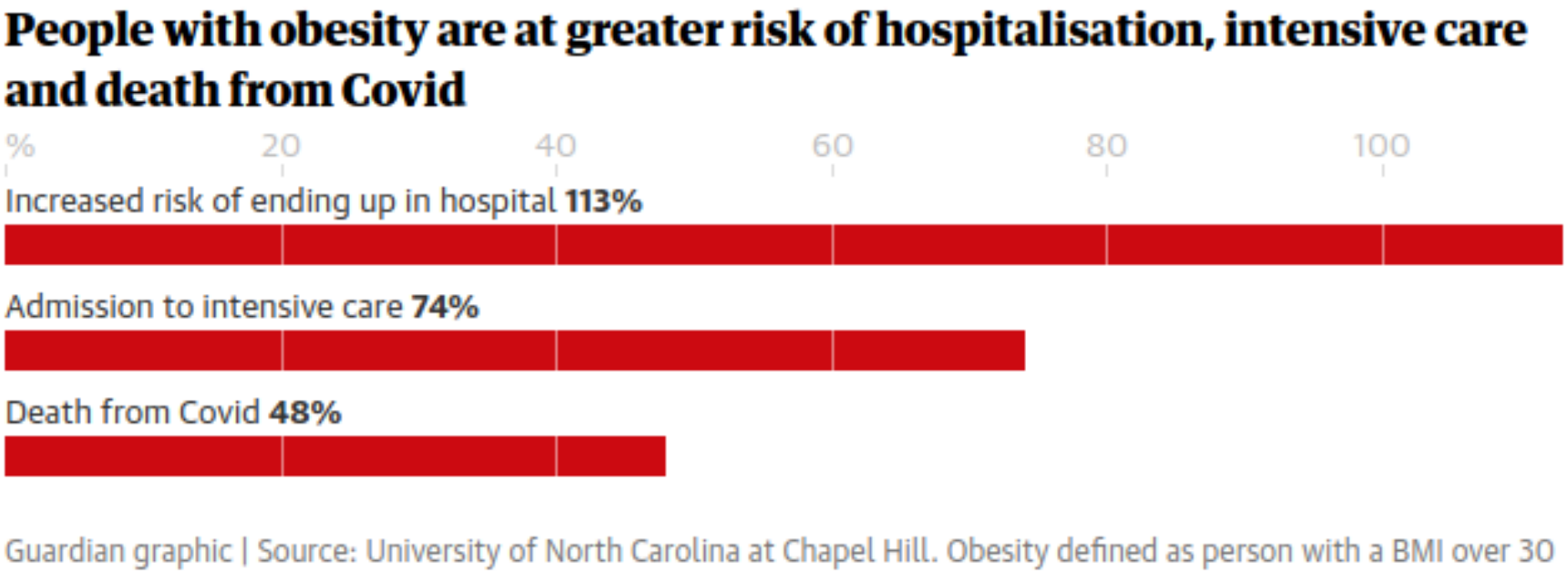
Warwick Statistics Degrees Flexible, formidable, fun.

https://warwick.ac.uk/fac/sci/statistics/courses/

Covid-19 Statistics and obesity: Third year data science

What is your height? weight?

Do you want to reveal your BMI=weight in kg / (height in m)^2?



What does "increased risk" mean?

What was the quality of the data?

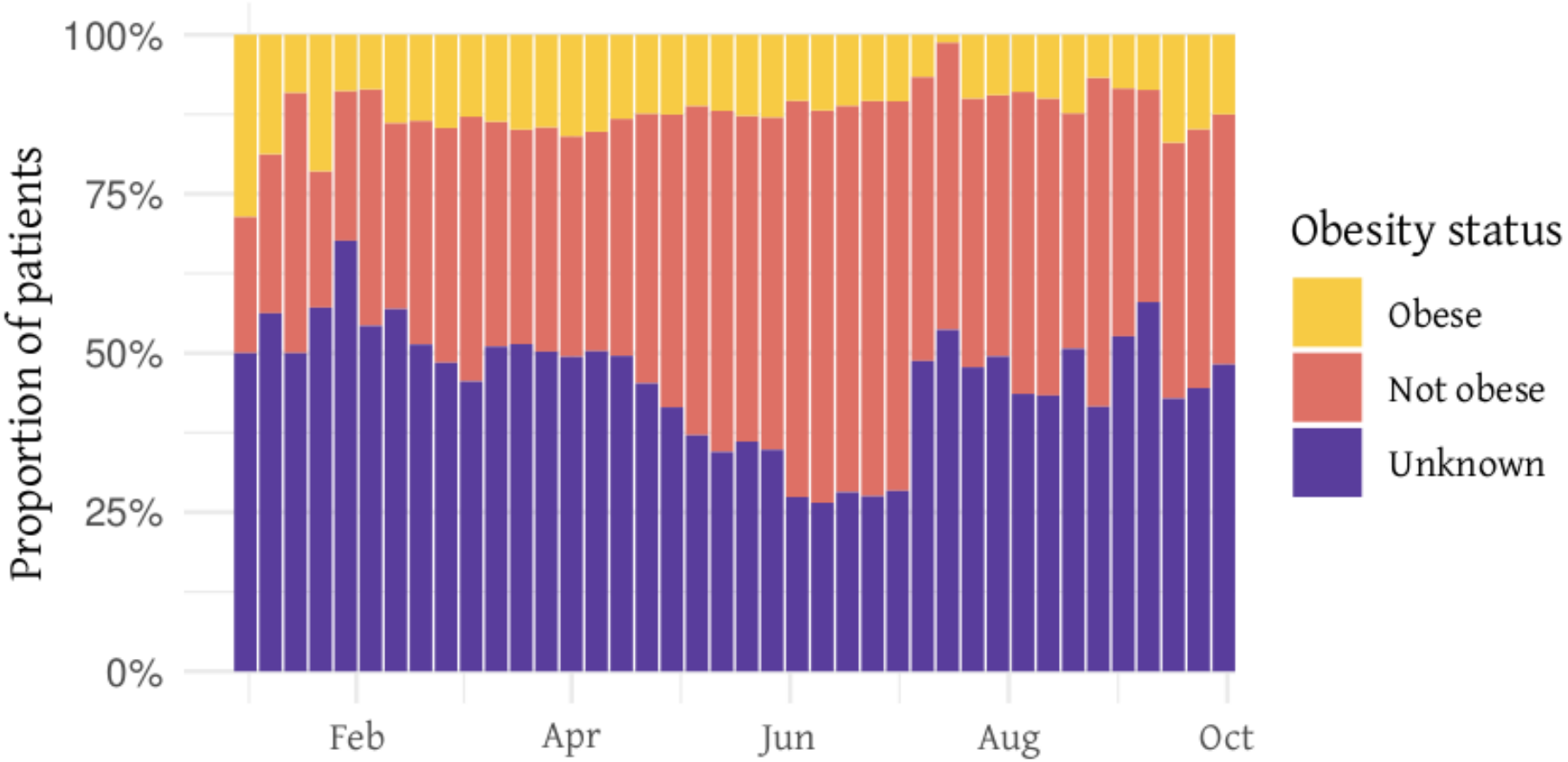
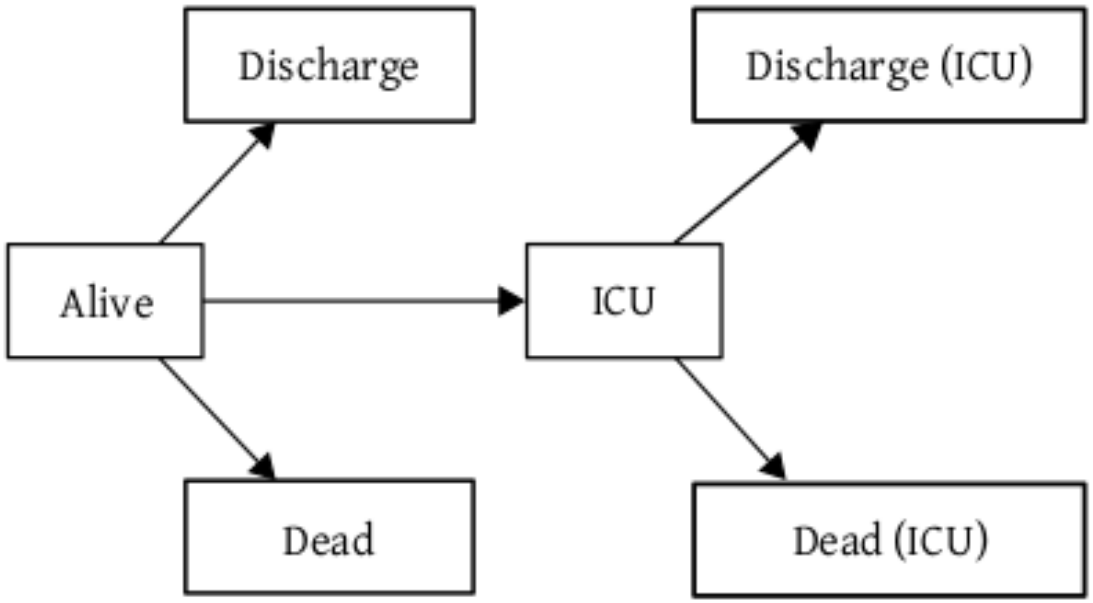


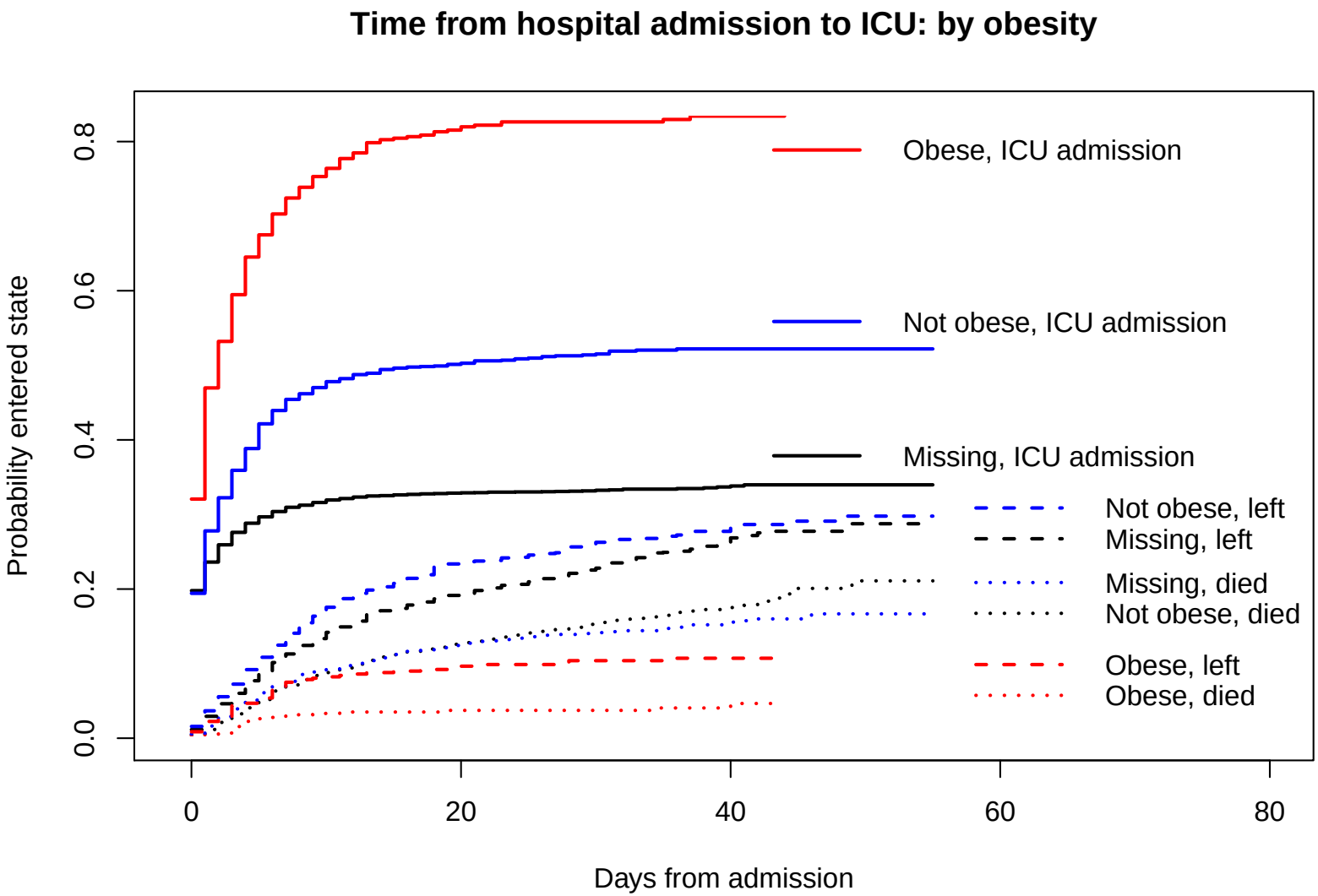
Figure 3: Weekly obesity classification in NHS Trusts in England
Obesity defined by clinical obesity ∪ BMI > 30.



Let $T_{i,S}$ be the time patient $i, i = 1, 2, \ldots n$, with covariates $x_i^t = (x_{i,1}, x_{i,2}, \ldots x_{i,p})$, (including obesity?) spent in state S. We can model $T_{i,S}|x_i$ by a random variable with distribution ...

Covid-19 Statistics and obesity, ICU & death

CHESS: 23 April 2020



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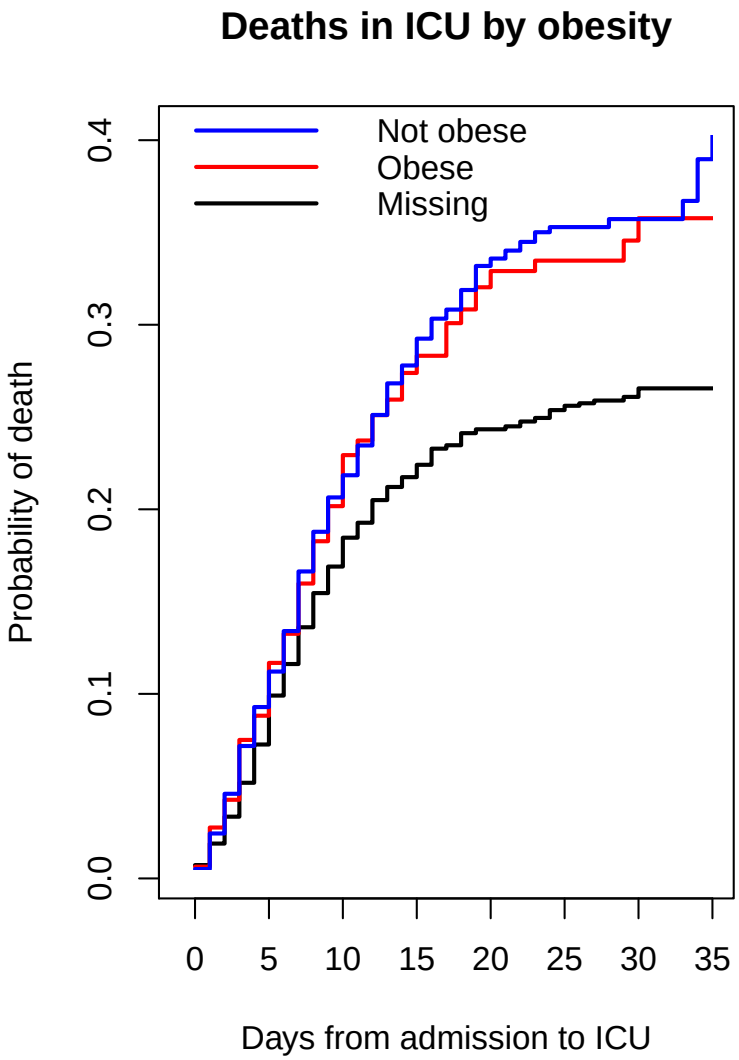

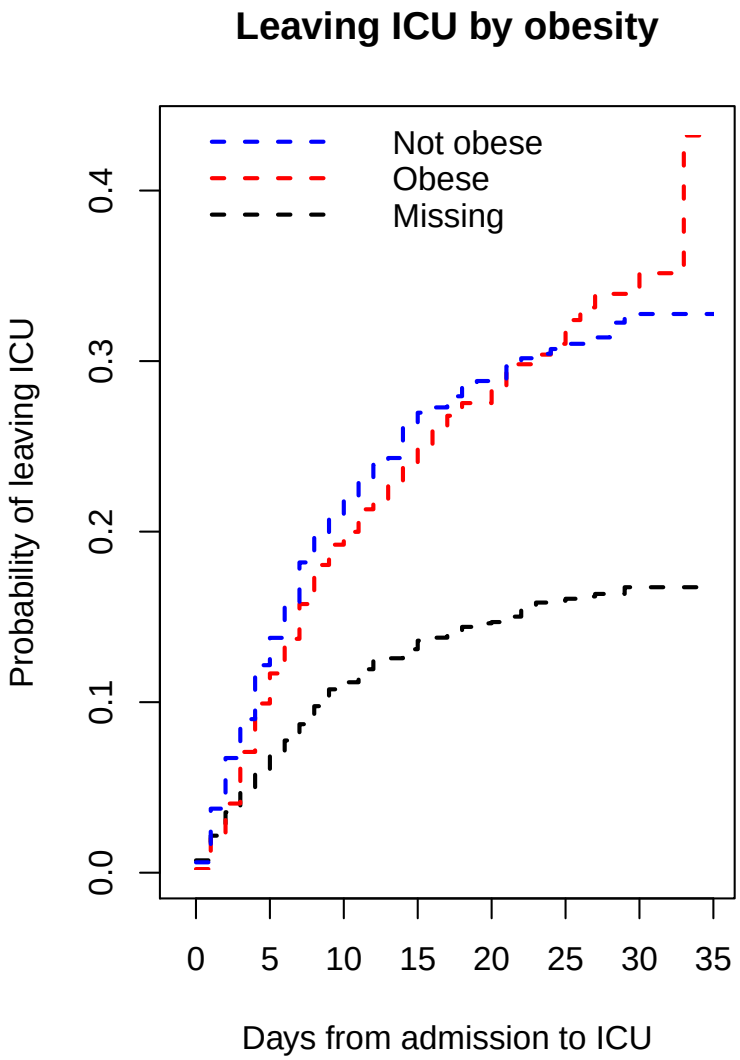

Covid-19 Statistics: ethnicity

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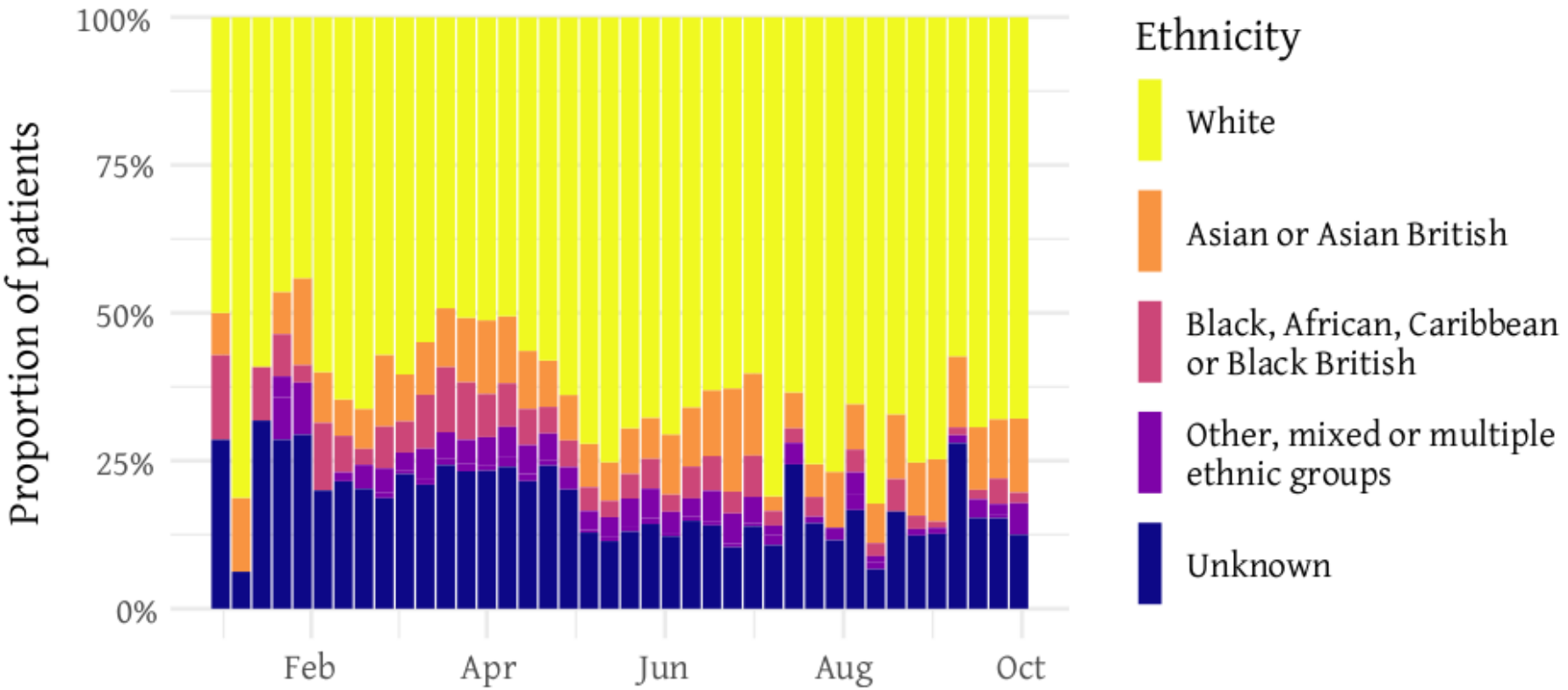


Figure 4: Weekly patient ethnicity in NHS Trusts in England

Nausea and vomiting in pregnancy: SPD Limited

Research

Roger Gadsby, Diana Ivanova, Emma Trevelyan, Jane L Hutton and Sarah Johnson

Nausea and vomiting in pregnancy is not just 'morning sickness':

data from a prospective cohort study in the UK

Abstract

Background

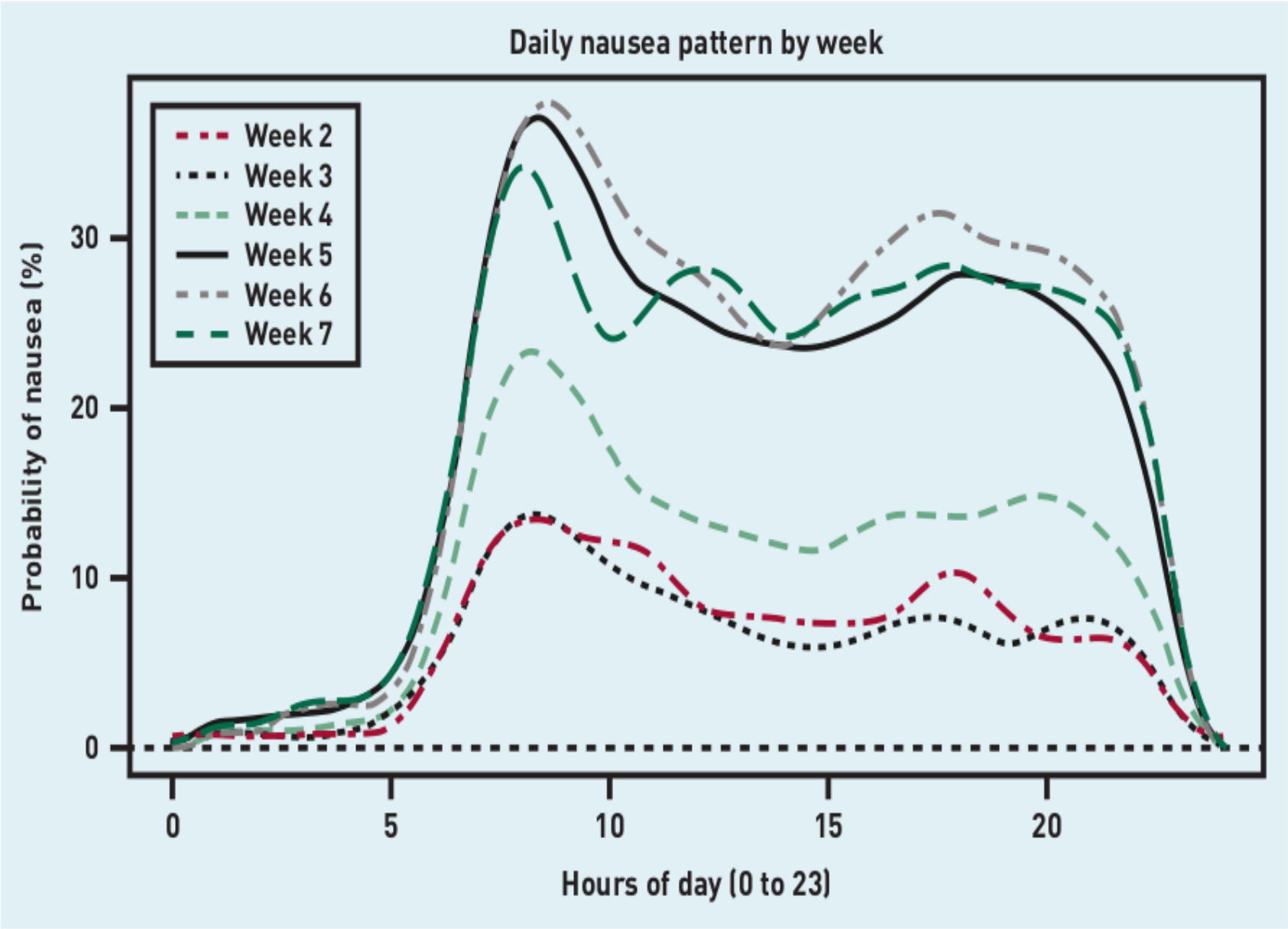
Nausea and vomiting in pregnancy is usually called 'morning sickness'. This is felt by

INTRODUCTION

Nausea and vomiting have been known to be early signs of pregnancy for several thousand years.[1] The phrase 'morning sickness' has been in widespread use for around 200 years to describe nausea and vomiting.[2] The use of the term is felt by many females, who have suffered from it, to trivialise the condition.[3]

Several studies have reported that females say that the symptoms of nausea and vomiting occur before and after noon,[8] and in severe cases can go on throughout the waking hours,[9] but the daily symptom patterns have not been clearly described. In spite of this the widespread use of the phrase 'morning sickness' persists.

Nausea and vomiting in pregnancy: SPD Limited



Nausea and vomiting in pregnancy: SPD Limited

Gadsby *et al. BMC Pregnancy and Childbirth* (2021) 21:10
https://doi.org/10.1186/s12884-020-03478-7

BMC Pregnancy and Childbirth

RESEARCH ARTICLE Open Access

The onset of nausea and vomiting of pregnancy: a prospective cohort study

Roger Gadsby[2], Diana Ivanova[1], Emma Trevelyan[1], Jane L. Hutton[1*] and Sarah Johnson[3]

Abstract

Background: Nausea and vomiting are experienced by most women during pregnancy. The onset is usually related to Last Menstrual Period (LMP) the date of which is often unreliable. This study describes the time to onset of nausea and vomiting symptoms from date of ovulation and compares this to date of last menstrual period

Methods: Prospective cohort of women seeking to become pregnant, recruited from 12 May 2014 to 25 November 2016, in the United Kingdom. Daily diaries of nausea and vomiting were kept by 256 women who were trying to conceive. The main outcome measure is the number of days from last menstrual period (LMP) or luteinising hormone surge until onset of nausea or vomiting.

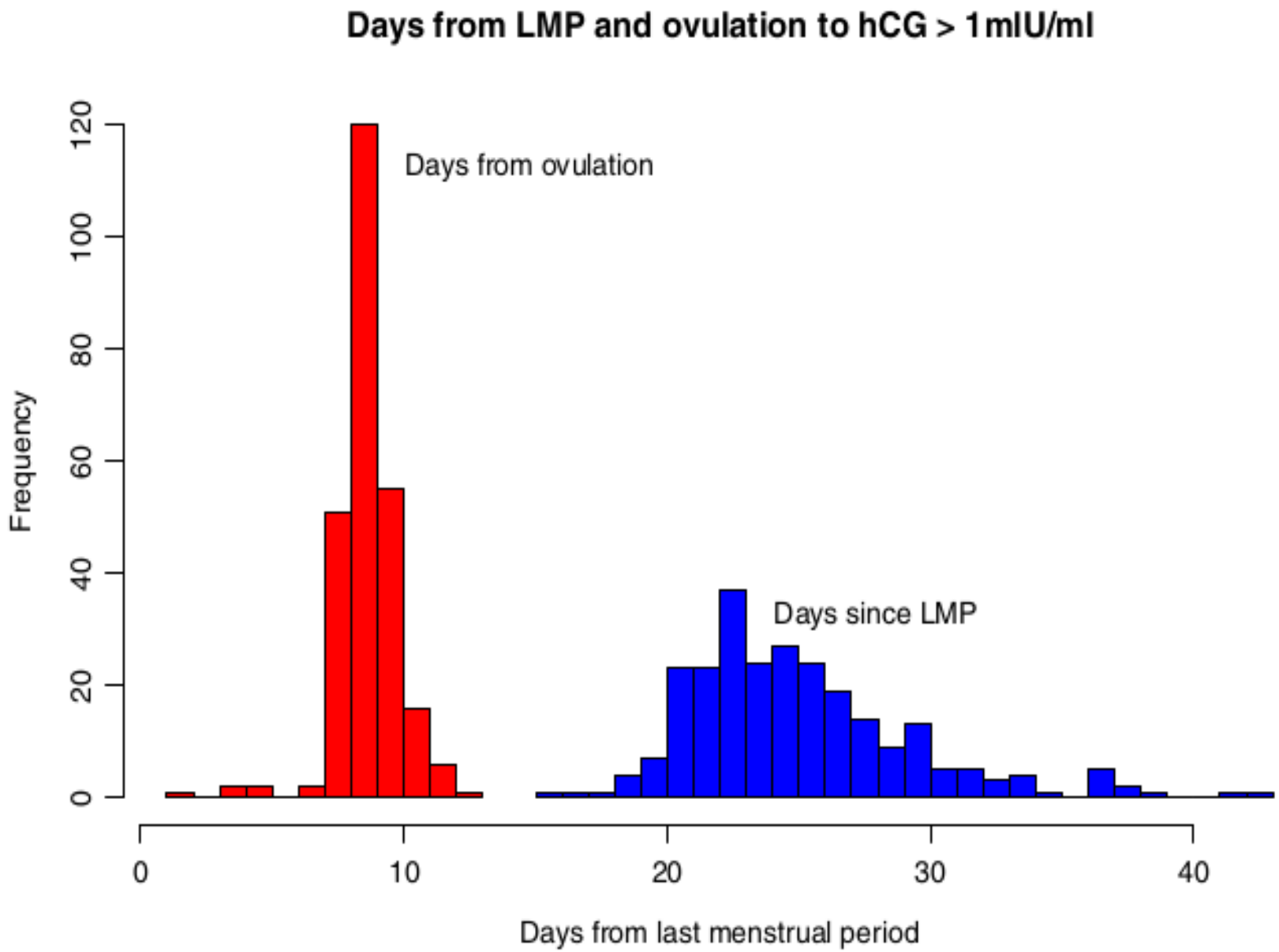
Results: Almost all women (88%) had Human Chorionic Gonadotrophin rise within 8 to 10 days of ovulation; the equivalent interval from LMP was 20 to 30 days. Many (67%) women experience symptoms within 11 to 20 days of ovulation.

Conclusions: Onset of nausea and vomiting occurs earlier than previously reported and there is a narrow window for onset of symptoms. This indicates that its etiology is associated with a specific developmental stage at the foetal-maternal interface.

Trial registration: NCT01577147. Date of registration 13 April 2012

Keywords: Pregnancy, Nausea, Vomiting, Onset, Last menstrual period, Luteinising hormone (LH) surge

Nausea and vomiting in pregnancy: SPD Limited



Publications from previous projects

Stats MSc student publishes in Early Medieval History

It is not unheard-of for Stats MSc students to find their MSc dissertation leading to a publication, but rather less common for the publication to be a component of a book on early medieval history! But that's what happened to Clair Barnes' MSc dissertation ("Statistics in Anglo-Saxon Archaeology", Department of Statistics, Warwick, 2015); you can read all about it in:

Barnes, C., and W.S. Kendall. "Perches, Post-Holes and Grids." In Planning in the Early Medieval English Landscape, edited by Blair, Rippon & Smart, Liverpool University Press, Appendix A, 213–31, 2020.

Clair started off studying English Literature as an undergraduate at UCL, but then took an OU degree in Math & Stats while working after graduation. That led to a Warwick MSc in Stats and most recently to a return to UCL, working for a PhD in statistical meteorology at UCL. Statistical science leads to all sorts of unexpected adventures ...

https://blogs.warwick.ac.uk/randomcuriosities/entry/stats_msc_student/

Fri 03 Jul 2020, 14:06 | Tags: Dept, Students, Science

Warwick Statistics Degrees: Flexible, formidable, fun

First B.Sc in Data Science was at Warwick.

The curriculum is under review.

First and second years have been revised.

- Year 1: All degrees follow a *40 CATS* common statistics core of mathematical probability and statistical thinking.
- What is a *CAT*? Is it really 10 hours work?
- Year 2: All programmes follow a common 50 CATS statistics core based on five 10 CATS modules.
- Options from across the faculties.

Warwick Statistics Degrees: Flexible, formidable, fun

Balance of modules (*CATS*) in first two years.
Normal load is 120 *CATS*.

Degree	Year	Maths	Stats	Econ	WBS	CompSci	Other
MORSE	1st	40	40	30	10	?	?
MORSE	2nd	?	50	15	10	?	?
MathStat	1st	50	40	?	?	?	?
MathStat	2nd	10	50	?	?	?	?
DatSci	1st	40	40	?	10	30	?
DatSci	2nd	?	50	45	?	?	?

? means you can choose modules, within an overall total load.