Institute for Fiscal Studies

Under pressure? NHS maternity services in England

Elaine Kelly and Tom Lee, IFS

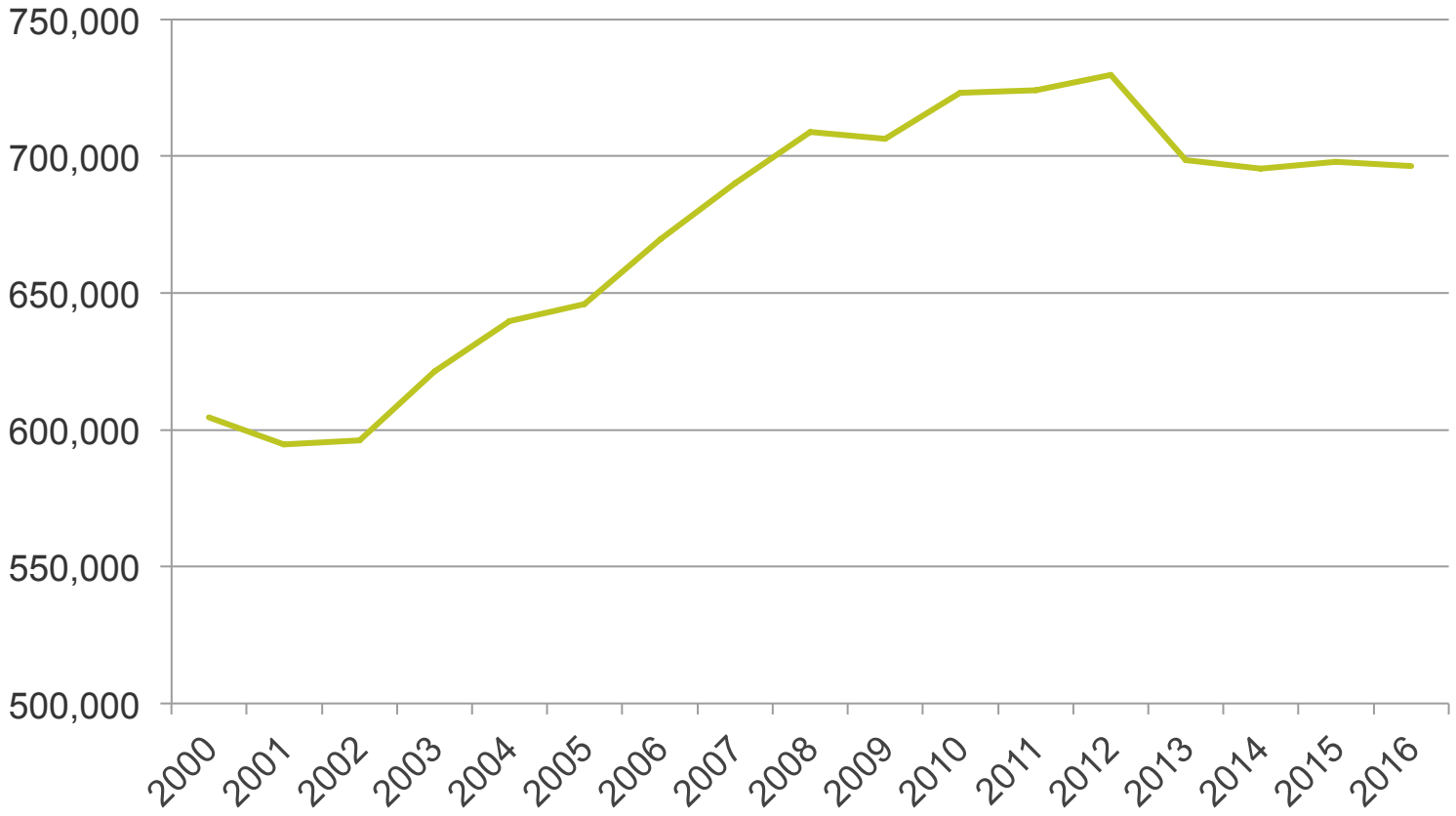
September 11th 2017

Pressure on maternity units in England

Institute for Fiscal Studies

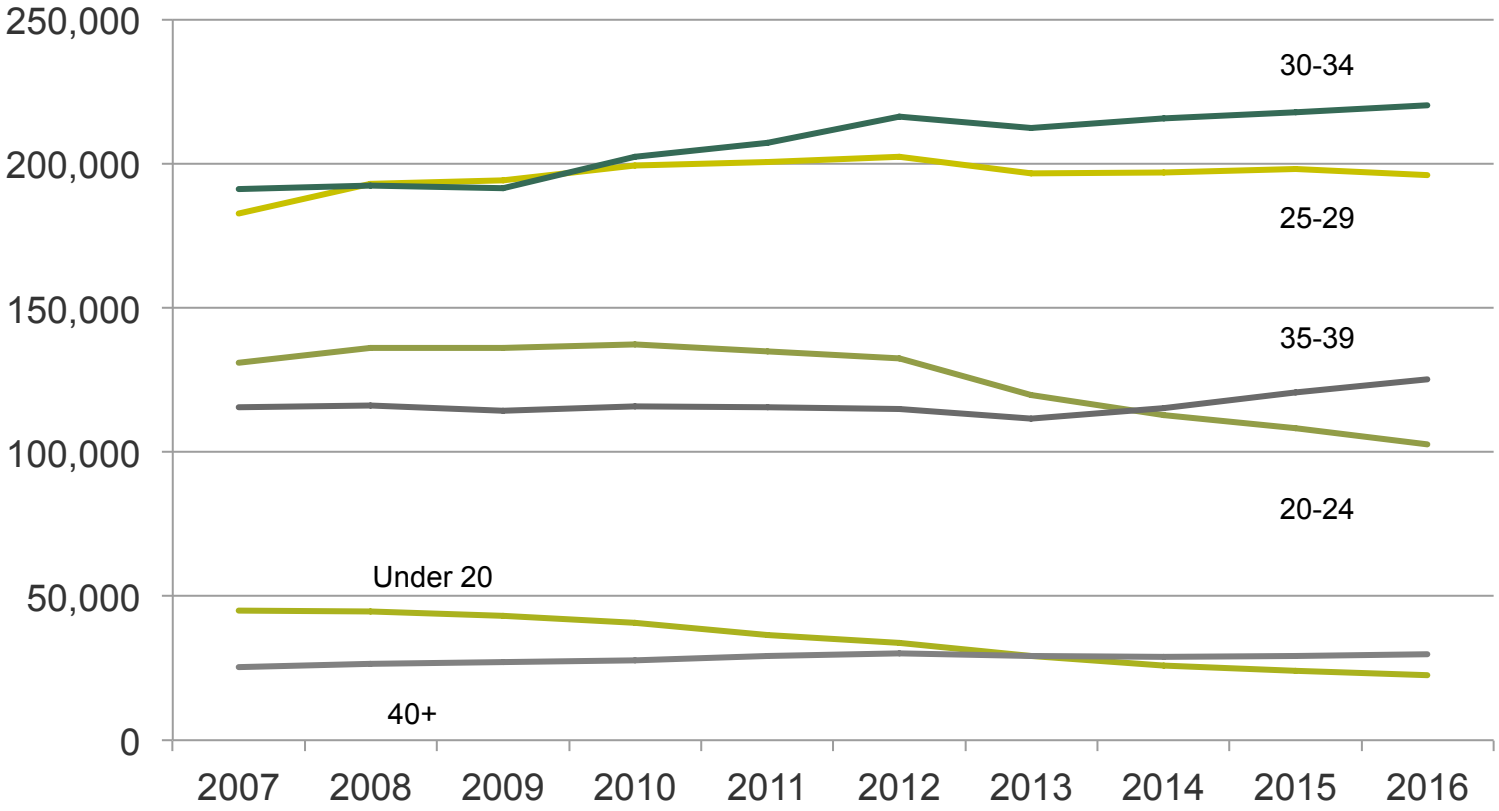
- The 2016 National Maternity Review "Better Births" set out a vision of a safer, more personalised, kinder, professional and more family friendly maternity service.
- At the same time, maternity units (MUs) face challenges from a high birth rate, an increase in the number of complex births and unfilled staff rosters.
- We present research on some of the sources of **long-run** and **short-run** pressures on MUs in England.
- The aim is to identify sources of pressure, and to assess what types of actions could be taken to relieve those pressures.
- However, it should be noted that such actions are likely to be costly, and must be balanced against the potential benefit to mothers and babies.

Maternities increased 2000-08, stabilised thereafter



Source: ONS: Birth Summary Tables, England and Wales, 2016. Total Maternities

The age composition of mothers is changing



Source: ONS: Birth Summary Tables, England and Wales, 2016, Births by age of mother

- Growth in mothers over 30; fall in mothers under 25.

Why does changing case mix matter for maternity units?

Institute for Fiscal Studies

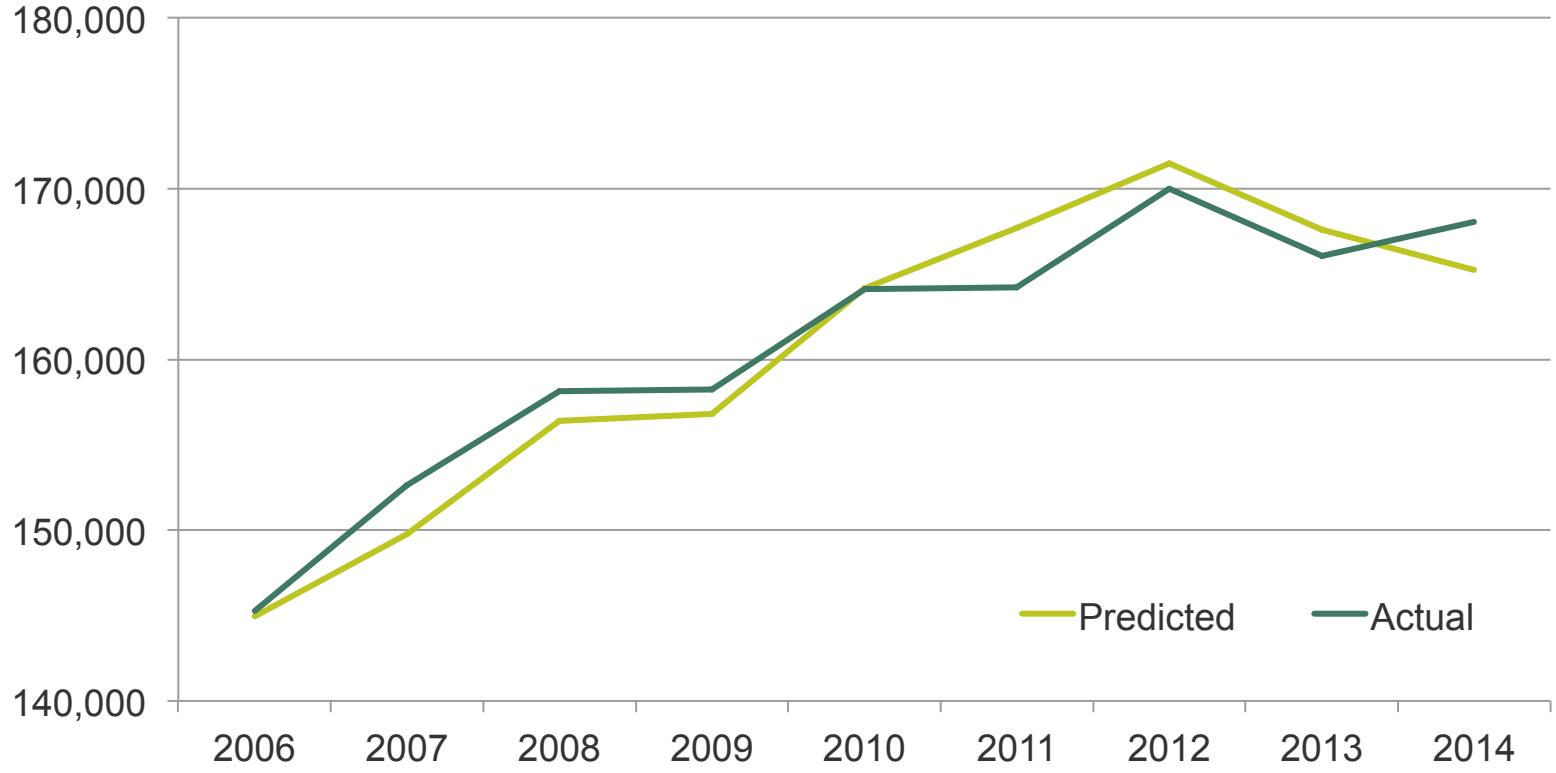
- Certain groups of mothers are more likely to require costly and time intensive care than others.
  - **16.6%** of women aged **20–24** stayed four days or more, compared with **25.6%** of mothers aged **40–44**.
  - The rate of C-sections in 2014 was **18.4%** for those aged **20–24** compared with **42.7%** for those aged **40–44**.
  - Mothers recorded as obese in hospital admissions records were **38%** more likely to spend four or more days in hospital and **34%** more likely to have a C-section than other mothers.

How has changing case mix affected maternity unit activity?

Institute for Fiscal Studies

- Measures of maternity unit activity, such as C-sections, instrumental deliveries, length of stay will depend upon:
  1. The characteristics of mothers (case mix)
  2. Clinical practice (e.g. NHS target to reduce stillbirths by 50% by 2030)
- We separate the role of changing case mix by:
  - Predicting the probability of an outcome based on pre-labour characteristics of the mother in 2006 :
    - Age, ethnicity, parity, multiple pregnancy, preterm, non-cephalic presentation, hypertension, pre-eclampsia, placenta praevia, diabetes, heart conditions, obesity, timing of first antenatal booking appointment.
  - Using these estimates to predict outcomes for mothers giving birth in subsequent years.

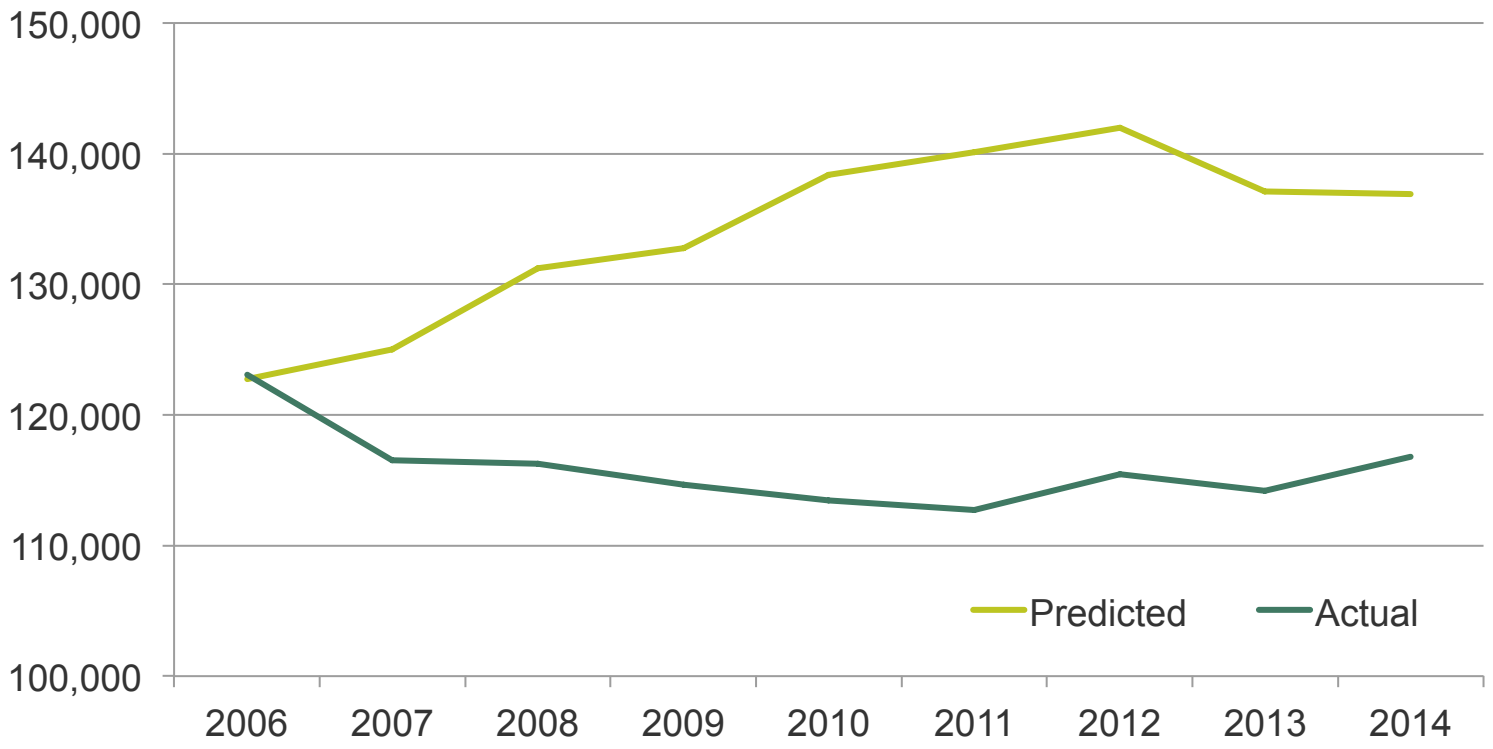
Actual and predicted C-sections



Note: Includes all elective and emergency C-sections. Authors' calculations using HES , 2006-2014

- An extra 23,000 C-sections in 2014 relative to 2006; explained entirely by the case mix of mothers.

Actual and predicted maternity stays of 4 days+



Source: Authors' calculations using HES , 2006-2014

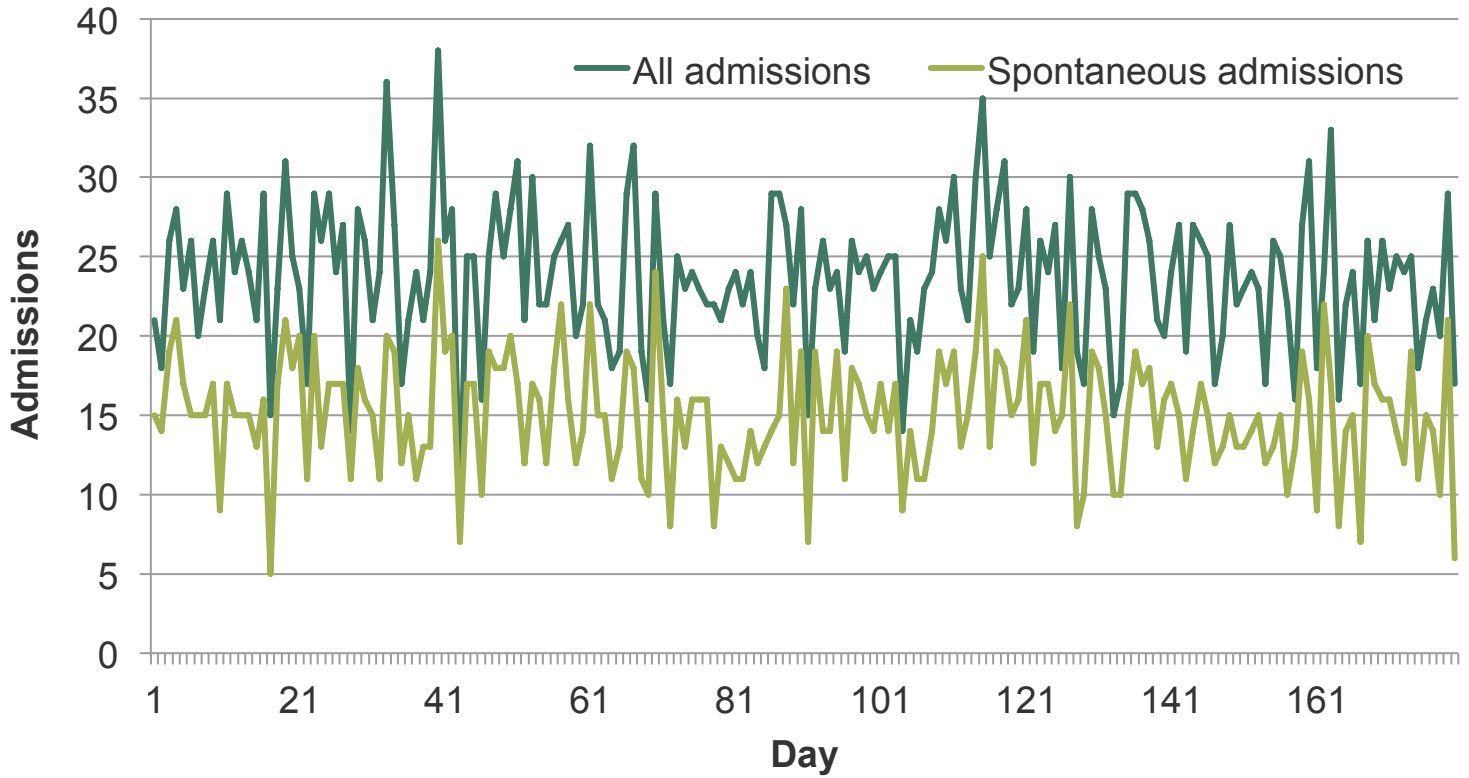
- Long stays were predicted to rise, but have actually fallen.

Long term pressures: Summary

Institute for Fiscal Studies

- The characteristics of mothers giving birth is changing in ways that make providing care more time and resource intensive.
- Evidence from the last decade suggests that there are limits to MUs ability to adjust care to compensate for increased demand on their resources.
- The recently established **Maternity Services Data Set (MSDS)** will provide far more information on a mother's characteristics, care provided during labour, and the outcomes of mothers and babies.

Short-run pressure: admissions per day in one large MU



Source: HES, a 180 day period between 2011-2014 for one large MU.

- Admissions fluctuate, but beds numbers are fixed and staff are rostered in advance

How can MUs respond to short term pressure?

Institute for Fiscal Studies

- Daily fluctuations in maternity admission are an inevitable feature of maternity services.
- These fluctuations are potentially harder to manage given increased long term pressures.
- When MUs reach capacity they may:
  - ***Delay*** planned admissions (elective C-sections, inductions).
  - ***Speed up*** labour of women admitted.
  - ***Reduce*** length of stay.
  - ***Call in*** more staff.
- As a last resort a MU can temporarily ***close*** to new admissions.

What are closures and why do they matter?

Institute for Fiscal Studies

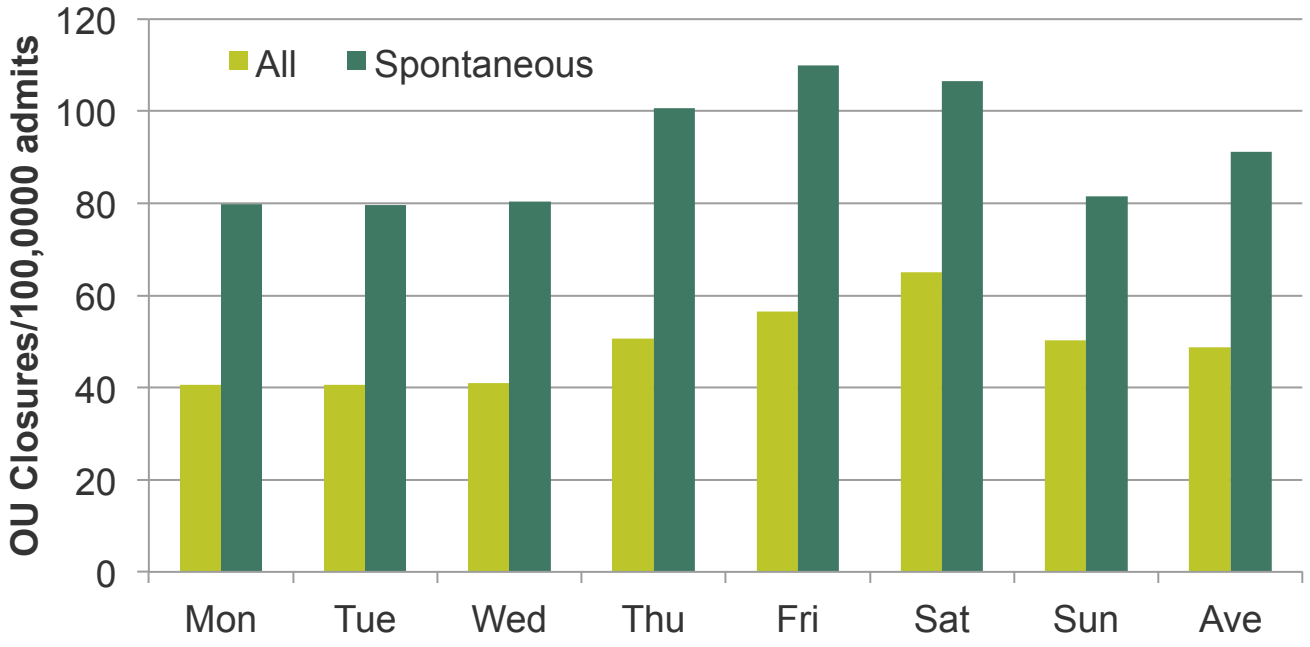
- MUs make the decision to close to safe-guard the care of mothers and babies. Median length of closure is **8 hours** (NHS England FOI data).
- Why do closures matter?
  - Impact on women – stress, choice.
  - As an indicator of pressure on MUs.
- We collected dates MUs closed between **2011** and **2015**, using FOI requests to Acute Trusts:
  - **128/160** Obstetrics Units (OUs) and **69/98** Alongside Midwife Led Units (AMUs) responded.
  - OUs reported **1594** closures, AMUs **674** (average 2 days/MU/year).
  - Closures are concentrated: **15** OUs, **5** AMUs closed **31** times +.
- What predicts closures at the MU and Acute Trust level?

Closures are more likely when spontaneous (unplanned) admissions are high

Source: Authors' calculations using HES , 2011-2014, and FOI requests from Acute Trusts.

- **2.6** times more closures during the 61 busiest days of the year than during the least busy 61 days.

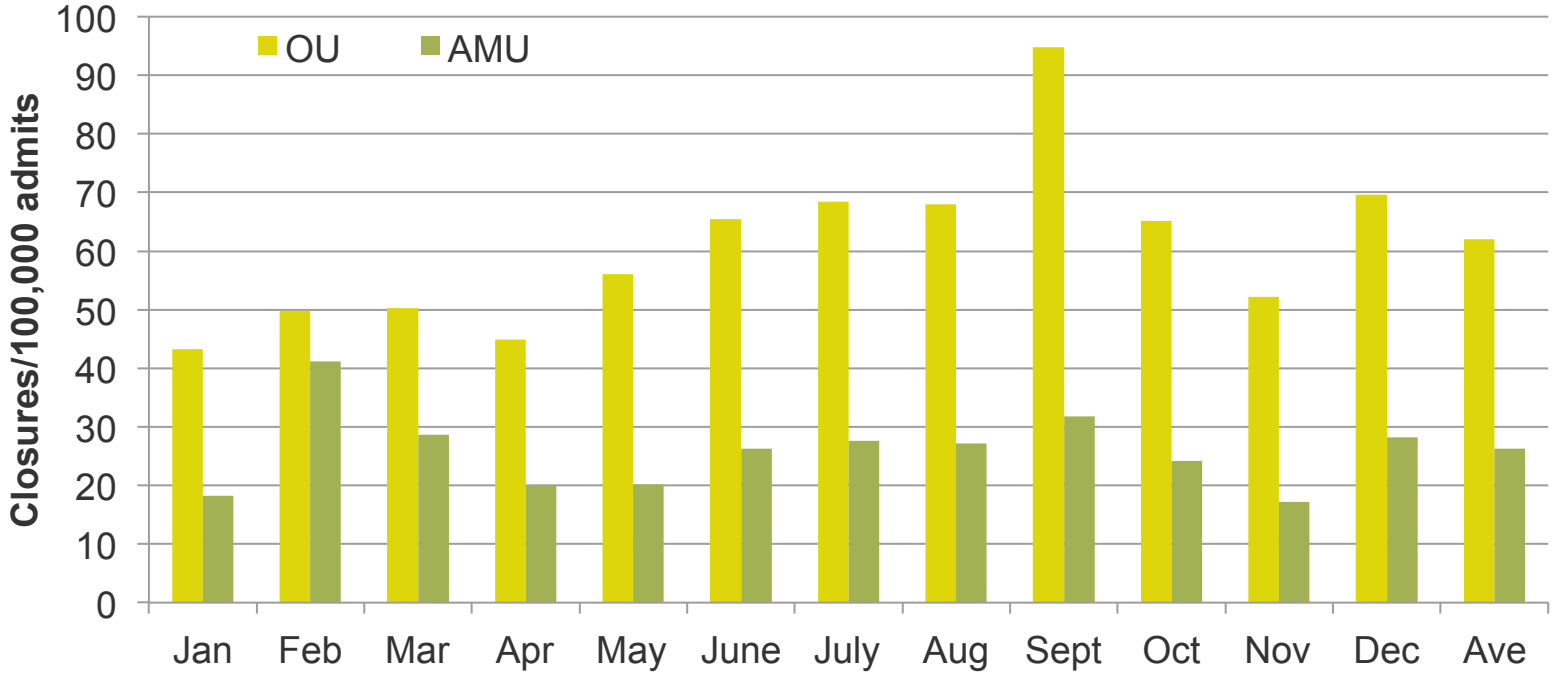
Closures are more common Thursday-Saturday



Source: FOI requests from Acute Trusts.

- Closures per 100k admits **30%** higher on **Thu-Sat** than **Mon-Wed**.
- Closures per 100k spontaneous admits elevated Thu-Sat even though spontaneous admits are spread evenly across the week.

Closures more common during September and during holiday periods



Source: FOI requests from Acute Trusts.

- Peak in **September**, coinciding with peak in births.
- Closures higher in holiday periods:
  - **50%** higher during **June** than **January** .

Pressures at the Acute Trust (hospital) Level

Institute for Fiscal Studies

Closures per year (% of Trust-years)	Months missed A&E target (mean)	Share of A&E patients who waited over four hours	SHMI (2015)	Local Trust population (mean, 2015)	Local Trust population of women aged 15–44 (mean, 2015)
0 (64.8%)	***5.0***	***8.5%***	1.011	415,600	81,100
1–2 (11.7%)	***5.6***	***8.4%***	0.997	405,500	82,700
3–9 (8.6%)	***8.1***	***10.2%***	0.989	393,000	79,000
10+ (6.6%)	***6.8***	***11.0%***	0.984	484,500	98,100
Missing (8.2%)	***5.1***	***6.4%***	1.003	444,400	84,600

Notes: Observations at a year/trust level. Closures obtained from FOI requests. A&E waiting times from the Hospital Episode Statistics. Monthly figures averages share of patients treated within 4 hours over calendar months. LSOA populations allocated to the head quarters of the nearest Trust with a MU and A&E department

- Trusts where maternity units close are also more likely to miss A&E targets.

Pressures at the Acute Trust (hospital) Level

Institute for Fiscal Studies

Closures per year (% of Trust-years)	Months missed A&E target (mean)	Share of A&E patients who waited over four hours	SHMI (2015)	Local Trust population (mean, 2015)	Local Trust population of women aged 15–44 (mean, 2015)
0 (64.8%)	5.0	8.5%	***1.011***	415,600	81,100
1–2 (11.7%)	5.6	8.4%	***0.997***	405,500	82,700
3–9 (8.6%)	8.1	10.2%	***0.989***	393,000	79,000
10+ (6.6%)	6.8	11.0%	***0.984***	484,500	98,100
Missing (8.2%)	5.1	6.4%	***1.003***	444,400	84,600

Notes: Observations at a year/trust level. Closures obtained from FOI requests. A&E waiting times from the Hospital Episode Statistics. Monthly figures averages share of patients treated within 4 hours over calendar months. LSOA populations allocated to the head quarters of the nearest Trust with a MU and A&E department

- But... Trusts that close more have slightly better clinical quality as measured by SHMI (note, whole Trust not MU).

Pressures at the Acute Trust (hospital) Level

Institute for Fiscal Studies

Closures per year (% of Trust-years)	Months missed A&E target (mean)	Share of A&E patients who waited over four hours	SHMI (2015)	Local Trust population (mean, 2015)	Local Trust population of women aged 15–44 (mean, 2015)
0 (64.8%)	5.0	8.5%	1.011	***415,600***	***81,100***
1–2 (11.7%)	5.6	8.4%	0.997	***405,500***	***82,700***
3–9 (8.6%)	8.1	10.2%	0.989	***393,000***	***79,000***
10+ (6.6%)	6.8	11.0%	0.984	***484,500***	***98,100***
Missing (8.2%)	5.1	6.4%	1.003	***444,400***	***84,600***

Notes: Observations at a year/trust level. Closures obtained from FOI requests. A&E waiting times from the Hospital Episode Statistics. Monthly figures averages share of patients treated within 4 hours over calendar months. LSOA populations allocated to the head quarters of the nearest Trust with a MU and A&E department

- Acute Trusts that close the most serve the largest local populations.

Summary: Short term pressures

- MUs face short run pressure from daily fluctuations in admissions relative to capacity. As a last resort units may temporarily close.
- We find that MUs are more likely to close during spikes in unplanned admissions.
- Occasional closures are perhaps inevitable, unless we are prepared to fund a service that operates with spare capacity much of the time.
- Rates of closure also vary by day of the week and season. This suggests that some closures could be foreseen and prevented.
- However, such actions may be costly and must be weighed against the potential benefits to women.

Discussion

- Maternity services in England face the challenge of improving quality, while contending with a trend towards more complex births.
- Many of the challenges faced by MUs are similar to those faced by other NHS services, such as A&E.
- Achieving the vision laid out in “Better Births” will therefore require:
  - Maximising what can be achieved through reform of maternity services within existing budgets.
  - Justifying the cost of actions to relieve pressure on MUs, based on the benefits to women and their babies, and the competing funding needs of other NHS services.