NHS

Central Midlands
Commissioning Support Unit

Modelling Future Activity Levels
Shrewsbury & Telford Hospital NHS Trust

v3

12/05/2014

Background

Central Midlands Commissioning Support Unit were commissioned to support the health economy in Shropshire and Telford to develop a range of models to estimate future activity levels in the local health economy as part of the Future Fit Programme.

This document provides the results of the first stage of the activity modelling process in relation to acute hospital services in Shropshire and Telford.

This document should be read in conjunction with the output of a parallel piece of wok to estimate future activity levels in community hospitals - *Modelling Future Community Hospital Provision in Shropshire and Telford.*

Experience Counts

Future Fit Programme

The objectives of the FutureFit programme are;

- to agree the best model of care for excellent and sustainable acute and community hospital services that meet the needs of the urban and rural communities in Shropshire, Telford and Wrekin, and Mid Wales;

- to prepare all business cases required to support any proposed service and capital infrastructure changes;

- to secure all necessary approvals for any proposed changes; and

- to implement all agreed changes.

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Stages of Activity Modelling

Modelling Stage	Scope	Future Fit Phase
Initial Acute and Community Hospital Activity Models	To estimate the impact of demographic change, traditional commissioner activity avoidance and provider efficiency strategies on acute and community hospital activity.	Phase 1b
Effects of new models of care	Building on the initial models, to estimate the consequences of more radical redesign proposals generated by the three clinical redesign workstreams; acute and episodic, planned care and long term conditions and frailty.	Phase 2
Option appraisals	Building on the models above, to estimate the likely activity levels at various sites under consideration.	Phase 3

Experience Counts

Initial Acute Activity Modelling – Objectives

To estimate the level of in-patient, out-patient and A&E activity that Shrewsbury and Telford Hospitals Trust might be expected to conduct in 2018/19 and the number of beds that would be required to deliver this.

These inputs, methods and results of the modelling exercise should be understood and agreed by representatives of Shrewsbury and Telford Hospitals Trust and the CCGs that are responsible for commissioning the majority of the activity from the trust.

Experience Counts

Process

The Activity and Capacity subgroup of the Future Fit Programme Board acted as the reference group for the modelling exercise.

The group met on 7 occasions between November 2013 and February 2014 to define the scope of the model, agree the model component and set the models change parameters.

Meeting Dates

- 12th November 2013
- 26th November 2013
- 17th December 2013
- 21st January 2014
- 4th February 2014
- 25th February 2014

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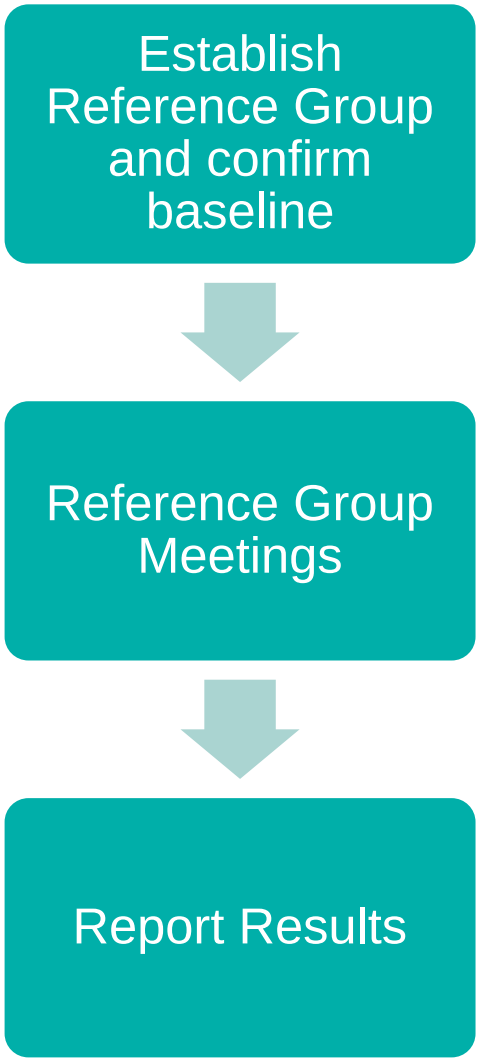
Reference Group Members

Name	Role	Organisation
Dr James Hudson*	GP Lead	Telford & Wrekin CCG
Mr Mark Cheetham*	Scheduled Care Group Medical Director	Shrewsbury & Telford Hospital NHS Trust
Julie Davies	Director of Strategy & Redesign	Shropshire CCG
Dr Bill Gowans	Vice Chair	Shropshire CCG
Donna McGrath	Chief Finance Officer	Shropshire CCG
Andrew Nash	Chief Finance Officer	Telford & Wrekin CCG
Fran Beck	Executive Lead, Commissioning	Telford & Wrekin CCG
Teresa Smith	Ward Manager, Ludlow Community Hospital	Shropshire Community Health NHS Trust
Julie Thornby	Director of Governance & Strategy	Shropshire Community Health NHS Trust
Dr Emily Peer	Associate Medical Director	Shropshire Community Health NHS Trust
Dr Subramanian Kumaran	Clinical Director	Shrewsbury & Telford Hospital NHS Trust
Dr Kevin Eardley	Unscheduled Care Group Medical Director	Shrewsbury & Telford Hospital NHS Trust
Debbie Vogler	Director of Business & Enterprise	Shrewsbury & Telford Hospital NHS Trust
Mr Andrew Tapp	Women's & Children's Care Group Medical Director	Shrewsbury & Telford Hospital NHS Trust
Jon Cook	Head of Strategic Transformation	Central Midlands CSU
Steven Wyatt	Head of Strategic Analytics	Central Midlands CSU
Jake Parsons	Strategic Analytics Senior Manager	Central Midlands CSU

** Joint Chair*

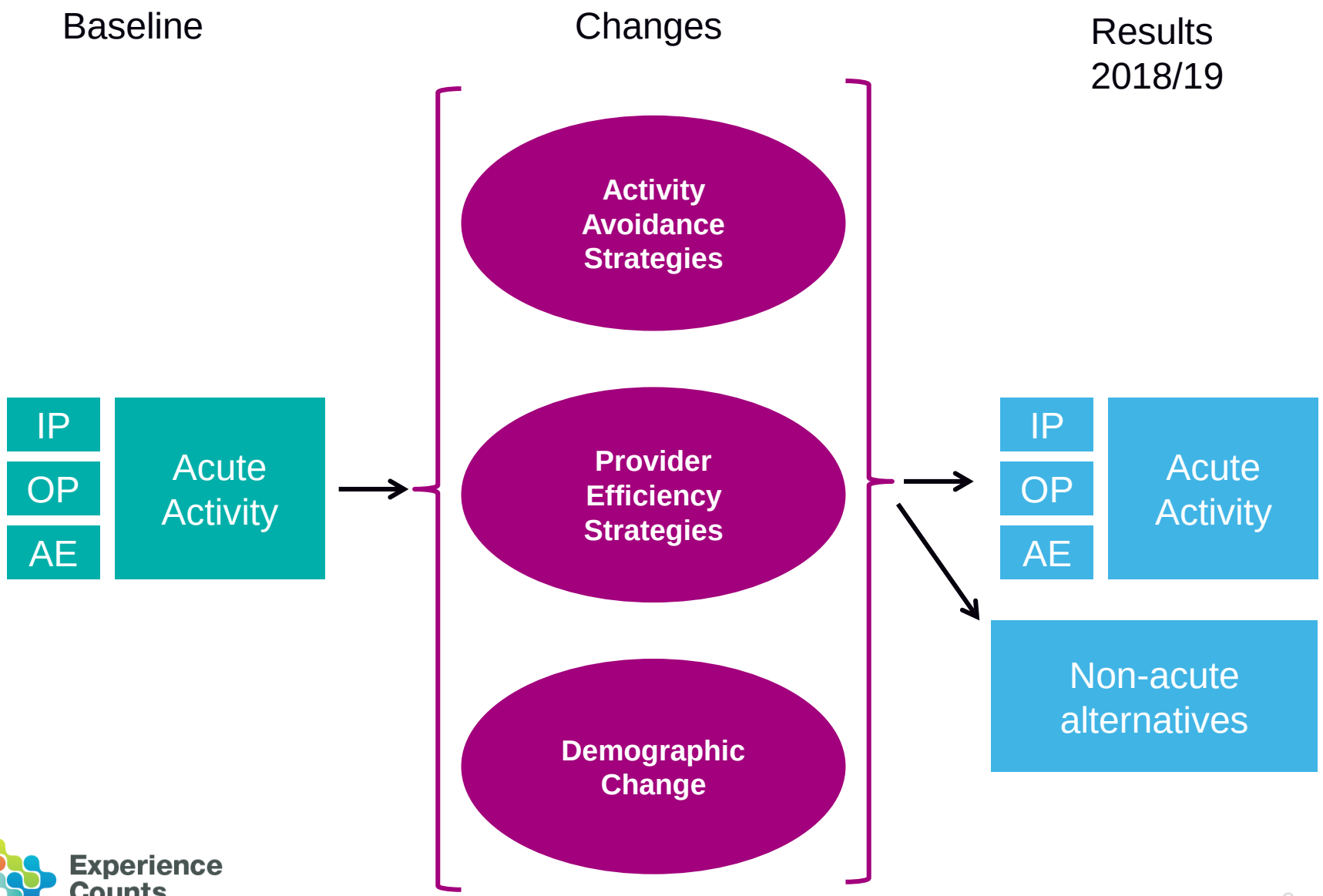
Process



Workshop	Content
1	Review and confirm objectives and scope Agree conceptual model & model components
2 - 4	Set inpatient parameters
5	Set demographics parameters
6	Set outpatient parameters Set A&E parameters
7	Review initial results Adjust parameters

Experience Counts

Overview of Modelling Approach



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Demographic Change

Three aspects of demographic were considered;

- **Changes in population size** were derived from ONS sub-national population projections.
- **Changes in population age profile will also be derived from** ONS sub-national population projections. Given that age is a strong predictor of healthcare utilisation, the model will estimates the change in demand attributable to the changing population age profile.
- **Changes in age-specific population health status** may offset some of the aging population effect as the population's age-specific health status improves. The reference group considered trends in life-expectancy and disability free life expectancy as a means of making judgements about whether there will be an expansion or compression of morbidity at the end of life. The reference group requested that two scenarios were modelled;
    1. No change in disability free life expectancy over the 5 year period covered by the model. In this scenario no changes are applied to age specific utilisation rates.
    2. An increase in disability free life expectancy, but at half the rate than has been experienced nationally over the past decade or so. In this scenario, age specific utilisation rates are altered by 1 year over the 5 year period, such that an average 91 year old in 2018 has the health status, and associated utilisation rates of a 90 year old in the baseline year.

Further details can be found in appendix A.

Commissioner activity Avoidance Strategies

These subsets of acute activity commonly form the basis of commissioner QIPP plans. The reference group reviewed materials comparing activity of this types at Shropshire and Telford Hospitals NHS Trust with other trusts in the West Midlands, activity trends, comparative rates of change and detailed diagnostic breakdowns. Based on this contextual information and knowledge of planned or potential QIPP schemes, the group set their expectation for activity of this type to change over the next 5 years.

Inpatients

- Ambulatory care sensitive
  - Chronic
  - Acute
- Medicines related
- Self Harm related
- Falls related
- Vaccine preventable
- Alcohol related
  - Wholly attributable
  - Largely attributable
  - Somewhat attributable
- Smoking related
  - Largely attributable
  - Somewhat attributable
- Obesity related
  - Largely attributable
  - Somewhat attributable
  - Marginally attributable
- End of Life Care
- Medically unexplained symptoms
- Zero Day LoS, no procedure, discharged alive
  - Children
  - Adults
- Cancelled operations
- Procedures of limited clinical value
  - Relatively ineffective
  - Close benefit / harm ratio
  - Probably aesthetic
  - Cost effective alternative
- Frail Elderly – step up
- Psychiatric liaison in A&E
- Readmissions

Out-patients

- GP Referral Management
- New to follow-up ratios (LTC)
- Consultant to Consultant referrals
- OP procedures

A&E

- Patient left A&E before being treated
- Low cost attendances – referred to GP or discharged
- Frequent Attenders

Provider Efficiency Strategies

These subsets of acute activity are commonly the focus of provider CIPs and in both elective care and urgent care and aim to reduce the bed usage for admitted patients or the resource impact of outpatient and A&E activity. The reference group set out their expectations for changes in these areas in the next 5 years.

Inpatients

Increased use of Day Surgery
- Day cases
- Outpatient procedures

Enhanced Recovery
- Colectomy
- Excision of Rectum
- Hip surgery
- Knee surgery
- Bladder surgery
- Prostate surgery
- Hysterectomy

Excess bed days
- Elective
- Emergency

Ambulatory emergency care
- Low potential
- Moderate potential
- High potential
- Greatest potential

Stroke early support discharge

Psychiatric Liaison – In-patents

Pre-Op Length of Stay

Frail elderly – Step Down

Out-patients

A&E

Attendance duration

Number of Investigation

Experience Counts

Links between the Inpatient, Outpatient, A&E and Community Hospital Models

Four activity models were created for Future Fit Phase 1b;

- Inpatients
- Outpatients
- A&E
- Community Hospitals

Although these models were constructed separately, the following transfers of activity between the domains covered by the models have been incorporated.

1. Ordinary elective and day case admissions >> outpatient procedures
2. Where certain emergency admissions avoided then associated A&E attendances also removed
3. Emergency admissions of frail older people to acute hospitals >> step-up admissions in community hospitals
4. Reducing length of stay of frail older people in acute hospitals >> step-down admissions to community hospitals

Experience Counts

Setting Parameters

The reference group were given the following guidance when setting change parameters in the model:

The parameters should represent the consensus view of the reference group about the extent to which activity of tis type could be avoided by 2018 in comparison to the baseline year.

The parameters should be informed by the contextual information supplied at the workshop session, but also their local knowledge of current, planned or potential QIPP or CIP schemes.

Each activity subset should be considered individually.

The agreed parameters should be both challenging and realistic.

Strategy parameters should be independent of demographic change and of each other.

The reference group were asked to consider the effect of traditional commissioner and provider plans and should not consider the potential effect or more radical service changes or site changes.

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Agreed Inpatient Strategy Parameters (1)

Admission Avoidance	Agreed parameter
Ambulatory care sensitive acute	Reduce 0 and 1 day LOS admissions for J03 and J06 at Telford by 20%
Ambulatory care sensitive Chronic	No change
Medicines related - Diuretics	No change
Medicines related - benzodiazepine	No change
Medicines related - Anti diabetics	No change
Medicines related - NSAIDS	No change
Self Harm related	No change
Falls related	20% reduction
Vaccine preventable	Remove 15% of total including all 0 LOS episodes
Alcohol related wholly	Switch proportions of day cases and inpatients for F10 and K70
Alcohol related somewhat	Remove 20% of 65+ non elective spells. Convert 50% of these to elective spells
Alcohol related marginal	Apply long term trend
Smoking related largely	Reduce to 0.5% across both sites
Smoking related somewhat	15-20% reduction of short stay R07 episodes
Obesity related -wholly	15% increase
Obesity related somewhat	Base parameter on age specific increases in obesity from foresight report
Obesity related marginal	Base parameter on age specific increases in obesity from foresight report
End of Life Care <2days	20% reduction
End of Life Care 3-14 days	20% reduction
End of Life Care 14+	No change
Medically unexplained symptoms	No change
Zero Day LoS, no procedure, discharged alive - Adults	Defer
Zero Day LoS, no procedure, discharged alive - Children	Defer
Cancelled operations	Maintain at 2.2% until 18/19 when 1% achieved
Procedures of limited clinical value – relatively ineffective	Reduce to 0.6%
Procedures of limited clinical value - potentially Cosmetic	No change
Procedures of limited clinical value close benefit-harm	No change
Procedures of limited clinical value cost effective alternatives	No change

Agreed Inpatient Strategy Parameters (1)

Admission Avoidance	Agreed parameter
Community Hospital Step-Up (frail elderly group 1)	80% reduction at Royal Shrewsbury
Community Hospital Step-Up (frail elderly group 1)	45.5% reduction at Royal Shrewsbury
Psychiatric Liaison - A&E	No change
Readmissions	No change

Length of Stay Reduction	Agreed parameter
BADS mainly Day Case	Move 50% of Q17 DCs at Shrewsbury to OP
BADS mainly OP procedure	No change
BADS mainly Day Case or OP procedure	Move 60 Q18 cases at Shrewsbury from DC to OP
BADS Occasionally Day Case	Increase J18 cases to achieve 80% DC Increase B27 cases to achieve 15% DC Increase M65 cases to achieve 20% DC Increase P23 cases to achieve 12.5% DC
Enhanced recovery - Hips	Down to 5.5 days
Enhanced recovery - Colectomy	Down to 5 days
Enhanced recovery - Excision of rectum	Down to 6.7 days
Enhanced recovery - Knees	Down to 5.2 days
Enhanced recovery - Bladder	No change
Enhanced recovery - Prostate	Down to 2.3 days
Enhanced recovery - Hysterectomy	Down to 2.5 days
Elective Excess bed days	No change
Emergency Excess bed days	No change
Psychiatric Liaison - Inpatient	No change
Stroke Early Supported Discharge	Down to 7 days
Ambulatory emergency care - Low	Achieve Mid Staffs levels 9% 0LOS
Ambulatory emergency care - Moderate	Achieve WAH level 39% 0LOS
Ambulatory emergency care - High	40% 0LOS
Ambulatory emergency care - Very High	Achieve mid staffs levels 27% 0LOS
Pre op LOS	Bring down Telford to 0.9
Community Hospital Step-down	63.8% reduction for 16.9% of cases

Agreed Outpatient and A&E Parameters

A&E	Agreed parameter
Patient attending lives close to A&E	No change
Patient left A&E before being treated	No change
Low cost attendances – referred to GP or discharged	Defer
Frequent Attendees	Not set (additional information required)
Number of Investigations	Remove investigations of the following types to achieve waiting time ambition – haematology, clotting studies, biochemistry, x-ray (plain film)
Length of time from being seen to departure	Achieve 97% < 4 hrs
Emergency ambulance conveyances	Not set

outpatients	Agreed parameter
GP Referred 1st Attendances – Trauma & Orthopaedics	Achieve average
GP Referred 1st Attendances – Cardiology	Telford down to regional average, RSH down to 0.5
GP Referred 1st Attendances – Ophthalmology	Defer
GP Referred 1st Attendances – All Other Specialties (children)	Achieve average
GP Referred 1st Attendances – All Other Medical Specialties	Achieve average plus rate of change
GP Referred 1st Attendances – All Other Surgical Specialties	Not set (additional information required)
New to Follow-Up Ratio – Medical Specialties	Move to 2.5
New to Follow-Up Ratio – Surgical Specialties (General)	No change
New to Follow-Up Ratio – Surgical Specialties (Ophthalmology)	No change
New to Follow-Up Ratio – Surgical Specialties (T&O)	Telford down to regional average
Consultant to Consultant Referrals	Achieve regional average

Links between the Inpatient and A&E Models

The reference group considered a wide range of opportunities to reduce emergency admissions and set parameters to reflect extent to which these opportunities could be realised by 2018/19.

In some cases reductions in emergency admissions could be delivered by changes in decision criteria in A&E, in others cases, admissions could be avoided through upstream interventions or by community based pathway redesign. In these latter cases A&E attendances associated with emergency admission were removed from the A&E model in 2018/19.

Avoided emergency admissions where the associated A&E attendance also assumed to be avoided;

- Ambulatory Care Sensitive (Acute)
- End of Life Care
- Smoking (Wholly and somewhat attributable)
- Alcohol (All those marginally attributable and all aged 65+ in somewhat attributable)
- Vaccine related
- Falls related

Experience Counts

Links between the Inpatient and Outpatient Models

The reference group reviewed elective activity which was delivered as ordinary or day case admissions in the baseline year and agreed parameters to reflect the opportunity to manage some of these cases as outpatient procedures.

The cases affected by these assumptions were removed from the inpatient activity model in 2018/19.

HRG specific multipliers were applied to the outpatient activity model to uplift the outpatient procedure activity accordingly.

Experience Counts

Links between the Acute and Community Hospital Models

In 2013, the health economy in Shropshire and Telford commissioned the Oak Group to conduct a utilisation audit of a sample of patients in the 2 acute and 4 community hospitals in Shropshire and Telford. The results of this audit were used by the reference group to estimate the level of activity that might be transferred from the acute hospitals to community hospitals. Two activity transfers were considered.

These changes were incorporated into both the acute and community hospital models.

Step-up - avoiding acute admissions of frail older people by admitted these patients instead to community hospitals, where bedded intermediate care, rather than acute care, was required at the point of admission.

Step-down – reducing the length of stay of frail older people in acute hospitals by discharging these patients promptly to community hospitals where the acute phase of their care is complete but the patient required a bedded intermediate care service.

Experience Counts

RTT Adjustments

The reference group requested elective and outpatient activity in the baseline year be adjusted to reflect that fact that activity levels in the baseline year were not those that were regarded as appropriate to keep pace recurrently with new referrals into RTT pathways.

In some specialties, activity in the baseline year was thought to be inadequate to keep pace with new referrals, leading to an increase in waiting lists and times.

In other specialties, waiting list initiatives in the baseline year meant that elective and outpatient activity was higher than would be required to keep pace with new referrals.

Specialty level adjustments were made to reset elective and outpatient activity levels in the baseline year to those delivered in 2013/14. Activity levels in 2013/14 were though to reflect recurrent level of demand. (See appendix B for more information).

Non-recurrent activity increases may be required to achieve RTT targets in the next few years, but these are unlikely to persist until 2018/19.

Experience Counts

Central Midlands
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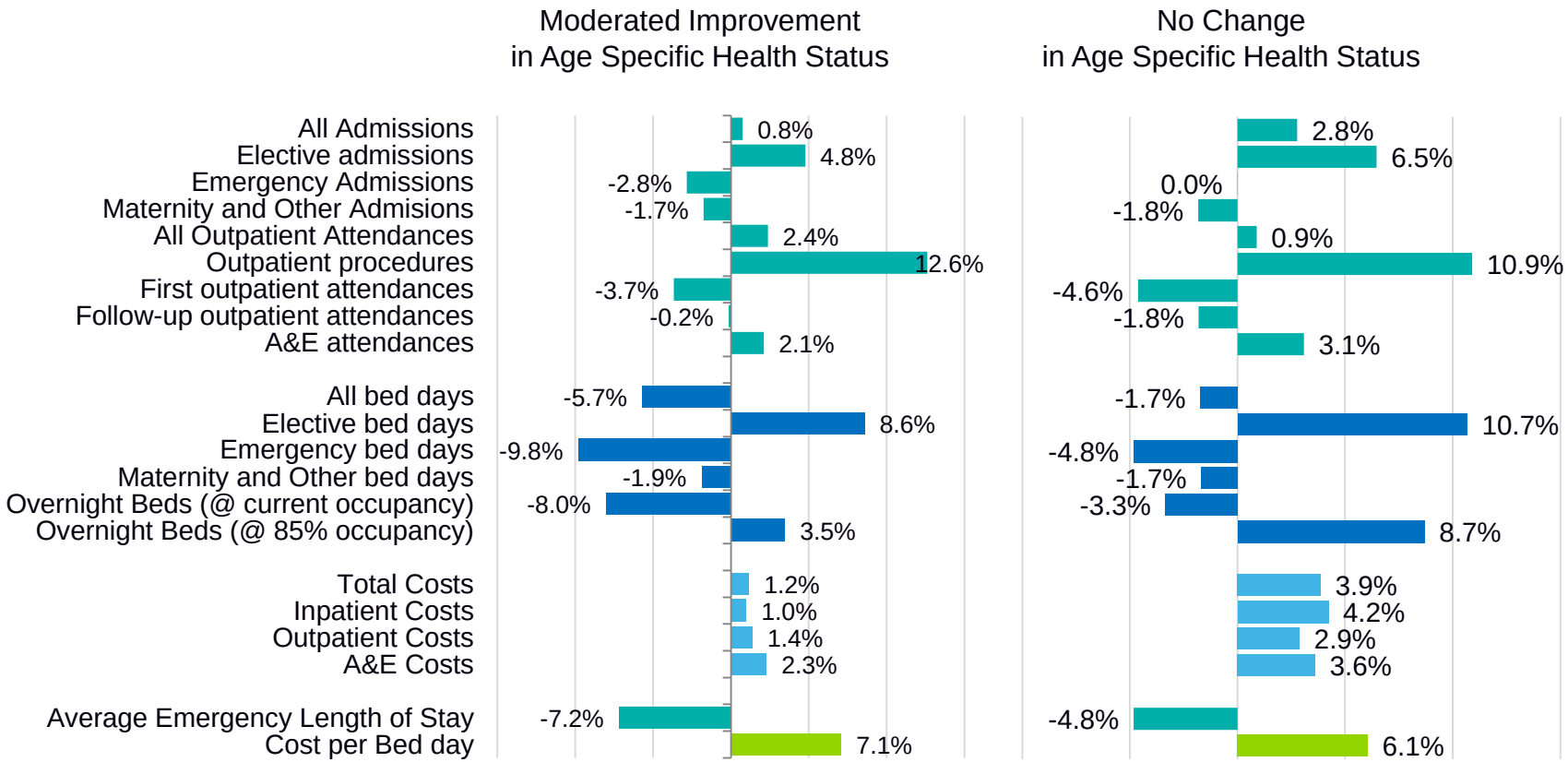
Summary Model Results

12/05/2014

Summary Model Results

The following chart shows the headline changes in activity, resource use and costs between the baseline year 2012/13 and 2018/19, under the two demographic scenarios.



Detailed analysis of these model results for these two scenarios are provided in the following sections.

Experience Counts

Unless otherwise stated, the following conventions have been followed when compiling the model results,

- activity in 2018/19 has been costed at 2012/13 prices
- bed days include both full and partial beds days – not just overnight stays