

REAL Centre

Working paper

Nurse supply model: exploring the impact of COVID-19

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About the REAL Centre



The Health Foundation's REAL Centre (research and economic analysis for the long term) provides independent analysis and research to support better long-term decision making in health and social care.

Its aim is to help health and social care leaders and policymakers look beyond the short term to understand the implications of their funding and resourcing decisions over the next 10-15 years. The Centre will work in partnership with leading experts and academics to research and model the future demand for care, and the workforce and other resources needed to respond. The Centre supports the Health Foundation's aim to create a more sustainable health and care system that better meets people's needs now and in the future.

www.health.org.uk/REAL

About DAS



DAS is an independent management consultancy with offices in the UK and Australia. DAS has expertise in the use of simulation, systems thinking, programme management, investment modelling and data analytics in government and business domains. Coupled with extensive regulatory, operations delivery and engineering experience, this expertise underpins their ability to look deeper into issues, to provide clearer insight and foresight, and to solve critical client challenges. DAS specialises in bridging the gap between strategy and operations, creating effective solutions to uniquely complex issues faced by our clients worldwide. DAS' clients cover the public, private and third sectors who look to us for strategic and operational support for their most critical issues.

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Nurse supply model: exploring the potential impact of the first wave of the COVID-19 pandemic on nurse supply

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Executive summary

Even before the COVID-19 pandemic, workforce shortages were identified as the [single biggest challenge](#) for health and social care in England. These issues have taken centre stage during the pandemic, with workforce shortages coming to the forefront. Of particular note are shortages in nursing, which accounts for 26% of the NHS workforce¹ and accounted for 42% of full-time equivalent vacancies in the NHS in England in September 2020.²

The COVID-19 pandemic has had a significant impact on workload, emotional and organisational demands on nurses, and how they deliver care. Alongside the changes to their professional responsibilities, government social distancing guidelines and fear of spreading COVID-19 will have also impacted nurses' personal lives, for example separation from family and friends and changes to caring responsibilities for children or elderly relatives. A number of emergency measures have been implemented to temporarily increase nurse supply during the pandemic and there has been a change in how nurses are perceived by the general public, potentially prompting nurses to reflect on the importance and value of what they contribute to society. There is potential that each of these changes will influence the career decisions of current and future nurses and have long-term consequences on nurse supply.

Therefore, the REAL Centre has commissioned DAS, who are currently developing a [nurse supply model](#), to explore the impact and implications of the first wave of the COVID-19 pandemic on the future supply of nurses in England and incorporate this insight and foresight into the development of the nurse supply model.

The project, undertaken between March and November 2020, focuses solely on the first wave of the pandemic, using material that was available between March and October 2020. The second and any subsequent waves were outside the scope of the project and are not considered in this report. The report centres on the prominent themes during the first wave of the pandemic: growing the workforce, redeployment, nursing students, increased demand, health and wellbeing, and immigration and how these will impact nurse supply in the short and long term.

Of the changes made to the workforce, the most significant changes are noted to be the increased workload and stress on nurses, nurses being redeployed and, in many cases, taking on more responsibility, and student nurses joining the workforce. The collective changes led to 25% of nurses being redeployed to hard-hit settings,³ 14,243 former and overseas nurses joining the temporary register⁴ and 28,108 students volunteering to join the workforce.⁵

Further, the contribution of nurses, in particular those working for the NHS, to the pandemic has been highly visible and challenged the public's previous perception of the role and importance of nursing for the delivery of an effective health and care system. This was demonstrated through the 'Clap for our Carers' movement and 'LightItBlue' campaign.

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Overall, the project concludes that COVID-19 has provoked substantial change across the nursing supply system that has likely impacted those considering a career in nursing and current and former nurses from all sectors.

This report presents the potential impact that the identified changes could have on individuals and future nurse supply. However, a clear conclusion from the project is that the impact COVID-19 will have on nurse supply is very uncertain. The research shows that the pandemic will have a different impact on individuals and their career decisions depending on a number of factors, such as their experience during the pandemic, personal circumstances, age and ethnicity. For example, evidence implies that COVID-19 has disproportionately impacted BAME nurses, highlighting that the impact on future supply will vary by ethnicity. Further, the research has also demonstrated differences between parts of the system. For example, while the pandemic shone a positive light on the NHS, it exposed a number of existing issues in the social care sector so it cannot be expected that the impact on future supply will be consistent across the system.

Our stakeholder engagement highlighted that the economic climate has a significant impact on nurses' decisions throughout their career. This suggests that the economic downturn induced by the pandemic could be one of the most impactful and long-term changes due to COVID-19 that influence future nurse supply.

In the absence of quantitative data at the time of the research, it is not possible to measure the full impact. Hence, it is recommended that when the data identified in this report become available, they are monitored to understand the system-wide impact. Even when data become available, external factors including the government's 50,000 nurse pledge and Brexit should be considered when assessing the figures.

1 Introduction

Decision Analysis Services Ltd (DAS) has been commissioned by the REAL Centre to explore the implications and potential impact of COVID-19 on the future supply of nurses and incorporate any insights into the development of the nurse supply model. The nurse supply model will provide projections of the future nursing workforce supply in England under alternative policy scenarios over a 5 to 20-year time frame.

1.1 Background

The [Health Foundation](#) is an independent charity committed to bringing about better health and health care for people in the UK. The aim of the Health Foundation is a healthier population, supported by high quality health care that can be equitably accessed.

The REAL Centre ([Research and Economic Analysis for the Long term](#)) is a specialist semi-autonomous centre within the Health Foundation. The REAL Centre focuses on economic research, model development and supporting analysis in health and social care. The Centre was formally launched in October 2020. A key objective of the Centre is to ensure that decisions about the funding, design and delivery of the health and social care system are informed by the best available analysis and evidence, and with consideration of the costs and benefits over the long term.

One of the REAL Centre's major outputs will be a series of projections of the long-term trends affecting the health service in England and the resources needed to provide a high quality service in the future. Decision Analysis Services Ltd (DAS) was commissioned to develop a nurse supply model representing the whole of the nurse supply system in September 2019. DAS is an independent management consultancy with an expertise in the use of simulation, systems thinking, programme management, investment modelling and data analytics in government and business domains.

The World Health Organization (WHO) declared the COVID-19 outbreak as a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. This led the UK government to introduce emergency legislation, the Coronavirus Act 2020, on 25 March 2020.⁶ The government response during the pandemic has led to a number of significant changes on the demands on nurses and required them to adapt their ways of working to meet these demands. The contribution of nurses to the pandemic has been highly visible and challenged the public's perception of the role and importance of nursing for the delivery of an effective health and care system. Nurses themselves may have also experienced a greater awareness of their value to their patients and the wider public. These changes will likely continue into 2021 and may impact on nurses' future career decisions, shaping the future supply of nurses in the UK.

Therefore, the REAL Centre has commissioned DAS to explore the impact and implications of COVID-19 on the future supply of nurses in England and incorporate any insights into the development of the nurse supply model.

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1.2 Nurse supply in England

Even before the COVID-19 pandemic, the Health Foundation had identified workforce issues as the single biggest challenge for health and social care in England.⁷ Workforce shortages are a major concern, with NHS full-time equivalent vacancies exceeding 87,000 in September 2020.² Nursing, in particular, is a key shortage area, accounting for over 36,000 (42%) of these vacancies despite nurses only making up 26% of the workforce.¹ While both figures have declined relative to June 2019 (when overall NHS full-time equivalent vacancies exceeded 100,000 and nursing vacancies numbered over 40,000), nursing vacancies accounted for a higher share of all vacancies in September 2020 relative to June 2019. Looking further back, while activity in NHS trusts increased by over a quarter (26%) between 2010/11 and 2017/18, the number of full-time equivalent nurses increased by just 1%.^{*} Workforce shortages are already having a direct impact on patient care and staff experience, with a recent Royal College of Nursing (RCN) survey highlighting nurse perceptions of increases in stress and work hours.⁸

One of the main reasons for the shortages in nursing, and in the NHS as a whole, is a lack of long-term planning around staffing levels and a 'boom and bust' approach linked to funding.^{9,10} The lack of high quality, robust, and transparent projections of workforce supply and demand is a major factor underlying the lack of a coordinated workforce strategy. This is partly due to a lack of capacity and capability at both national and local levels, exacerbated by reorganisations of the system architecture.¹¹

The COVID-19 pandemic has had a significant impact on the demands on nurses and how they deliver care. A number of emergency measures have been implemented to temporarily increase nurse supply during the pandemic and there has been a change in how nurses are perceived by the general public, potentially prompting nurses to reflect on the importance and value of what they contribute to society. There is potential that each of these changes will have long-term consequences on nurse supply.

1.3 Scope

The project was undertaken between March and November 2020 and focuses solely on the first wave of the pandemic, using information that was available between March and October 2020. The second and any subsequent waves were outside the scope of the project and are not considered in this report.

^{*} Source: NHS Digital, NHS Workforce Statistics; ONS, Public service productivity: healthcare, England.
Note: output is cost and quality adjusted activity

1.4 Approach

DAS adopted a three-pronged approach to this research comprising a review of the literature, stakeholder engagement and a review of data.

The research commenced with a literature review to understand the changes to the nurse workforce and working practices adopted in response to the first wave of the COVID-19 pandemic and the longer-term implications. The review explored, although was not limited to, open-source information, policy documents, academic papers and opinion pieces.

To gather insights, DAS interviewed stakeholders from across the health and social care system. Many of the stakeholders involved in this project were already engaged in the development of the nurse supply model. Additional stakeholders, including those working at a trust level and directly with nurses and student nurses, were identified to provide further insight.

Stakeholders interviewed for the project include:

- Council of Deans of Health
- Hampshire Hospitals NHS Foundation Trust
- Health Education England (HEE)
- Migration Advisory Committee (MAC)
- NHS Digital
- NHS Employers
- NHS Trusts
- Nuffield Trust
- Nursing and Midwifery Council (NMC)
- Skills for Care
- University of Southampton

Due to COVID-19, engagement was carried out remotely via semi-structured telephone/Skype interviews and questionnaires.

Stakeholder interviews were designed to capture:

- Changes adopted in response to COVID-19 from March to June 2020 that impacted the nurse workforce.
- Possible impacts of the changes.
- Commentary and experiences of the nursing workforce during COVID-19.
- Insights on the perception of nurses and how their experience may influence their future career decisions.
- Insights on the perception of future nurses and how their experience may influence their future career decisions.

The output of the interviews was validated and expanded on at a cross-sector stakeholder workshop held virtually using MS Teams. As for the stakeholder interviews, it was ensured that there were representatives from all parts of the health

and social care system to provide the desired breadth and depth of insight. The workshop attracted representation from the following organisations:

- Council of Deans of Health
- Department of Health and Social Care (DHSC)
- Health Education England (HEE)
- King's College London
- NHSX
- Nuffield Trust
- Nursing and Midwifery Council (NMC)
- Office for Students
- Royal College of Nursing (RCN)
- Skills for Care
- Staffordshire University
- The Health Foundation
- University of Kent
- University of Sheffield
- University of Surrey

Finally, a review of available data was carried out to identify existing and future data sources that could provide evidence on the possible impact of the workforce response and contribute to the nurse supply model (hereafter, NSM).

1.5 Structure of the document

The report is organised as follows:

Section 2 provides an overview of the approach and research activities adopted by DAS.

Section 3 presents a discussion of the findings from the research.

Section 4 describes how the output of the research will be applied to the NSM conceptual model.

Section 5 presents the conclusions from the research.

2 Research activities

This section describes the activities undertaken as part of the research and how they contributed to the project output. These activities include a review of the available literature, stakeholder engagement through interviews and a virtual workshop, and a review of relevant data.

2.1 Literature review

The project commenced with a review of available literature to provide a basis of understanding and inform the remainder of the project. The literature review element of the project was carried out from March to October 2020 and focused on changes introduced to the English nursing workforce and working practices during the first wave of the COVID-19 pandemic, from March to July 2020, and how the changes have impacted the workforce.

The literature review encompassed publications, journal articles, policy documents and press releases – all literature was sourced from the public domain. 46 items were identified and reviewed.

As the review was undertaken when the pandemic was ongoing, limited data or hard evidence were available and most of the literature draws on qualitative assessments, case studies or individuals’ opinion. For the purpose of this project, it is accepted that in some cases the literature will be biased or lacking supporting evidence but are considered sufficient to support the initial discussion presented. It is recommended that the data identified in this report (as detailed in Table 3) are monitored going forward to improve the quality of the evidence in future studies.

The majority of literature focused on the NHS, with almost half focusing solely on the NHS and the experiences of NHS nurses. While some literature described the impact that COVID-19 had had on the social care sector and its workforce, none was found that spoke about social care nurses specifically. Minimal literature focused on the implications for agency or bank nurses.

Table 1: Sector coverage

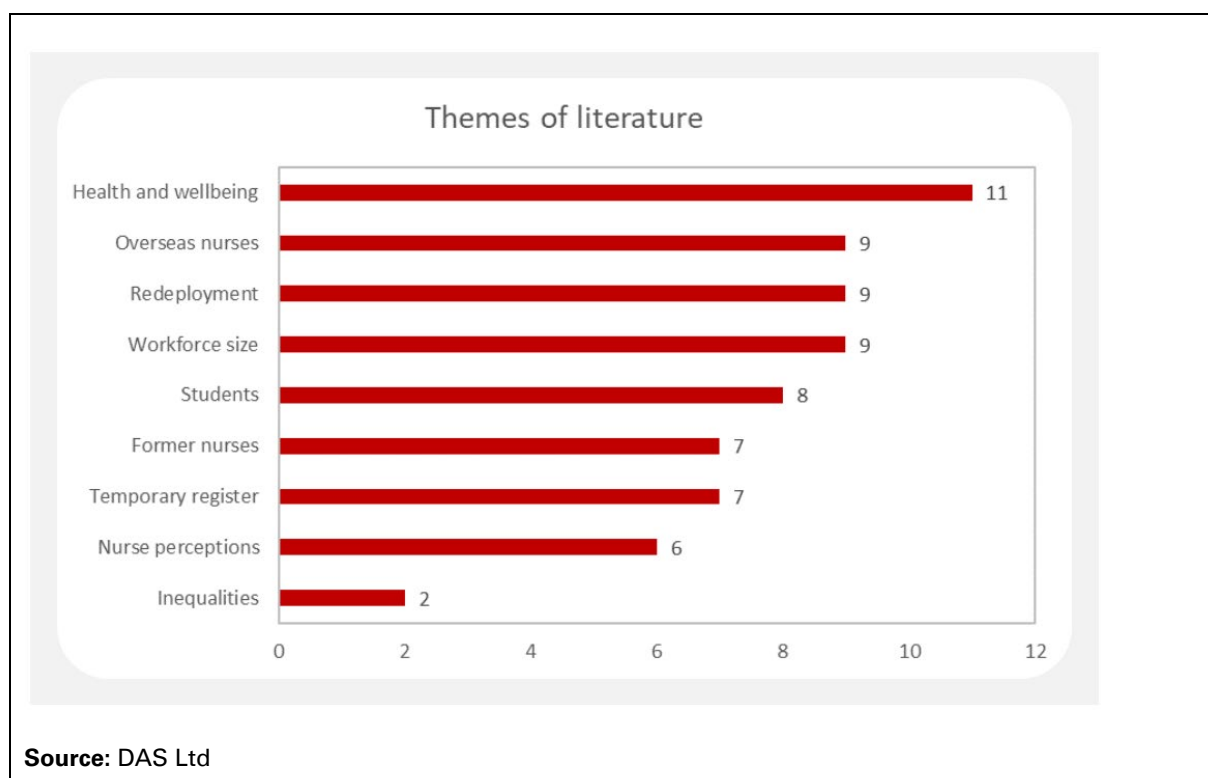
Sector	Literature qty
All sectors/systemwide	23
NHS	18
Social care	4
Private	1
Total	46

The review identified several key themes listed in Table 2. Health and wellbeing was found to be the most prominent theme in the literature, followed closely by redeployment, workforce numbers, overseas nurses and students. Some literature covered more than one theme.

Table 2: Themes of literature

Theme	Theme definition	Literature qty
Health and wellbeing	The impact of COVID-19 on the mental and physical health of nurses	11
Workforce size	The number of people in the nursing workforce	9
Redeployment	Nurses working in a different role temporarily during the pandemic	9
Overseas nurses	Overseas trained nurses supporting the COVID-19 response in the UK	9
Students	Students training to be a nurse	8
Temporary register	The COVID-19 emergency register launched by the NMC to enable former or overseas trained nurses to join the workforce during the pandemic	7
Former nurses	Former nurses with valid or lapsed registrations eligible to join the workforce during the pandemic	7
Nurse perceptions	The awareness and views of the nursing profession of nurses themselves and the public	6
Inequalities	The disproportionate impact of COVID-19 on BAME individuals	2

Figure 1: Themes of literature



A full list of the literature reviewed and the themes is detailed in Annex A.

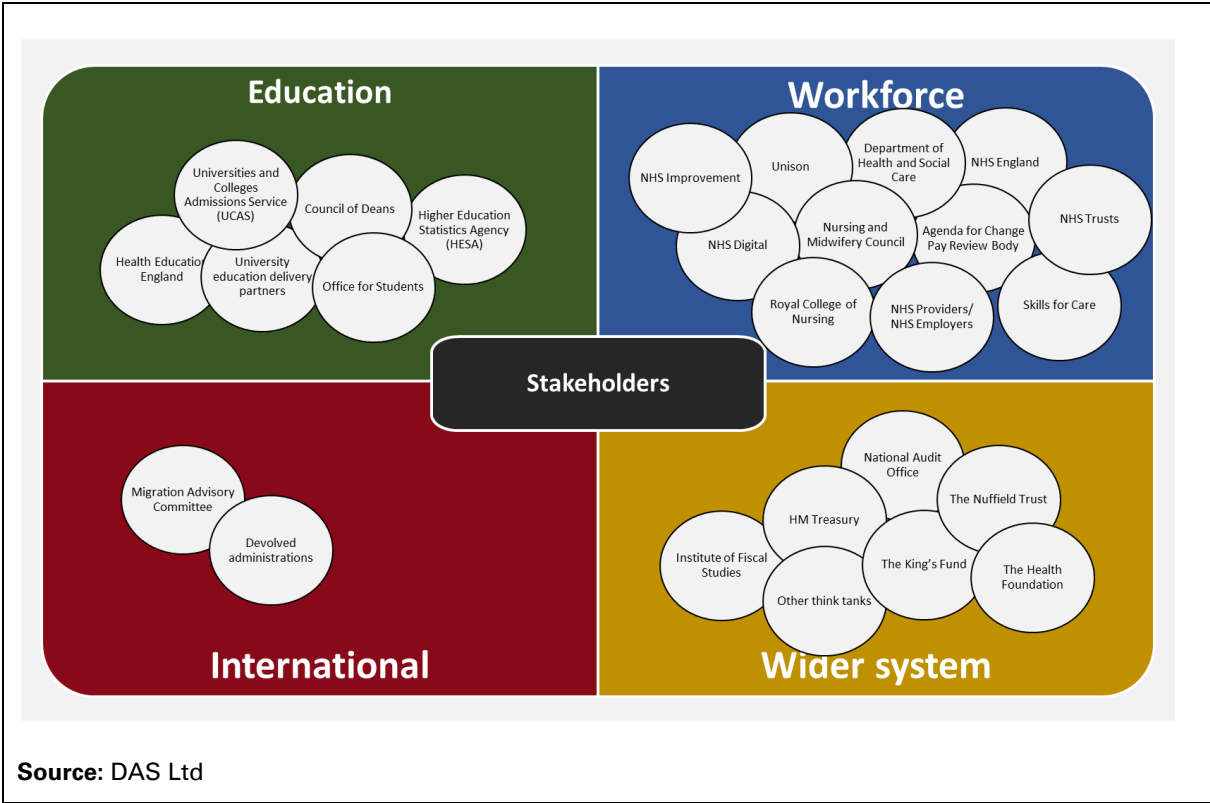
2.2 Stakeholder engagement

Wide stakeholder engagement and input was critical to understanding the full impact of COVID-19 on the nurse workforce and the success of this project.

The project engaged stakeholders from across the system to build an understanding of the changes introduced in response to COVID-19 and gain insights on the long-term impacts resulting from the changes.

The diagram below illustrates the key stakeholders in the system.

Figure 2: Stakeholder involvement



This was done through 11 semi-structured interviews and a facilitated virtual workshop. Interview questions were tailored for stakeholders in different parts of the system. See Annex C for the full list of questions.

A virtual workshop was held in November 2020. The workshop was attended by 27 individuals from 16 organisations across the nurse supply system. A full list of organisations represented at the workshop is detailed in section 1.3. The workshop applied elicitation exercises to establish stakeholders’ perceptions of the most prominent changes to the nurse workforce and explore how COVID-19 will likely impact future supply, with a particular focus on those training to be a nurse and the current workforce.

Figure 3 shows a word cloud highlighting the most prominent themes raised at the stakeholder workshop.

Figure 3: Workshop output



2.3 Data review

As the evaluation of data relating to the COVID-19 pandemic was undertaken as the pandemic unfolded from March to July 2020, quantitative data were not readily available.

The most common data reported in the literature were from surveys that had been carried out and published during the pandemic, including:

- Analysis of the NMC COVID-19 Temporary Register⁴
- Building a better future for nursing¹²
- Survey of UK nurses and midwives highlights their concerns about health, training and workload during COVID-19¹³
- RCN COVID-19 Staff Testing Survey¹⁴
- Has your COVID-19 experience made you rethink your nursing career?¹⁵

Due to delays in reporting, limited data were available during the time frame of the project that enabled the impact on the workforce to be monitored over time. However, potential data sources were identified during both the literature review and stakeholder engagement that could be applied to monitor the medium- to long-term impact of COVID-19 on the nursing workforce. A full list of identified data is detailed in Table 3 but examples include:

- applications and acceptances to nursing degrees (UCAS)
- university attrition rates (HESA)
- number of registered nurses (NMC)
- nurse turnover (NHS Digital and Skills for Care)
- nurse sickness absence rates (NHS Digital and Skills for Care).

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3 Discussion

This section presents and discusses the findings from the research activities described above. The discussion considers the potential impacts across a number of key themes.

The World Health Organization (WHO) declared the COVID-19 outbreak as a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. This led the UK government to introduce emergency legislation, the Coronavirus Act 2020, on 25 March 2020.⁶

The pandemic has had a profound impact worldwide, in particular on health and social care services and their workers including nurses. It has led to a number of significant changes on the demands on nurses and how they deliver care. In this section we discuss first, the changes made to the nursing workforce in England and second, how these changes could potentially impact the future English nurse supply.

3.1 Changes to the workforce

Key changes

- Increased workload and stress
- Suspension of routine and elective services
- Introduction of the NMC Temporary Register enabling former and overseas nurses to temporarily rejoin the workforce
- 25% of nurses redeployed to hard-hit settings
- 28,108 student nurses and student midwives volunteered for extended paid placements
- Increased sickness absence rates
- Travel restrictions preventing international movement

3.1.1 Growing the existing workforce

In April 2020, the Scientific Advisory Group for Emergencies (SAGE) predicted that COVID-19 patients requiring critical care beds¹⁶ could exceed the national capacity.¹⁷ This highlighted the need for increased capacity of not only beds but also staff. Therefore, action was taken to increase staff availability in critical areas by suspending routine and elective care, redeploying nurses to COVID-19 affected wards and encouraging former nurses to return to the workforce.

Following qualification, nurses must register with the NMC to be allowed to practise in the UK. Nurses are required to revalidate their registration every three years. If they do not revalidate, they are usually liable to be removed from the register. However, the Coronavirus Act⁶ suspended restrictions of return to work on NHS Pension schemes and enabled temporary registration of regulated health care professionals, including nurses. Consequently, the NMC launched the COVID-19 temporary register on 27 March 2020 allowing nurses and midwives who had left the register in the past 5 years to register temporarily.¹⁸

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Nurses trained outside the European Economic Area (EEA) are required to sit an objective structured clinical examination (OSCE) as part of their NMC registration process. Due to COVID-19, the OSCE test centres were closed from March to July 2020. During this period, overseas trained nurses who had completed all parts of their registration process except the OSCE were also eligible to join the temporary register.¹⁸

Over 10,000 nurses joined the temporary register within the first month¹⁹ and by July 2020 there were 14,243.⁴ The majority (82%) of the temporary nurses were former nurses.⁴ Of the former nurses on the temporary register, 44% that had left the register in the last 3 years had received an offer to practise compared to 20% who had left the register 3–5 years previously.⁴ NHS Digital data record only 165 nurses and health visitors who joined the workforce and have documented source of recruitment as 'Return to NHS COVID-19'.²⁰ This figure does not capture fixed-term, honorary or bank contracts, which could explain why it appears low. But our stakeholders acknowledged that the number of nurses employed from the temporary register has been lower than expected.

In the NHS, the suspension of routine and elective services meant there was limited demand for temporary registrants in non-COVID settings,²¹ so there were fewer opportunities for temporary registrants who wished to work in these areas. Further, it was recorded from our interviews that employers found it easier to contact nurses who were known to them and were familiar with their ways of working, rather than recruiting individuals from the temporary register who might require training or supervision. It has also been reported that the centrally managed employment checks process was slow, creating delays in temporary registrants joining the workforce.³

There was even less employment of temporary registrants in social care than in the NHS. The NMC was unable to find a mechanism to share the register with social care organisations and there is evidence that providers were wary about taking on former nurses due to supervision and training requirements. Instead, many social care providers used local staff banks to meet the increased demand.²¹

The remaining 18% of temporary registrants were overseas nurses who had completed all parts of their registration process except their OSCE.⁴ In contrast to former nurses, 97% of overseas nurses on the temporary register received an offer to practise. This high percentage is likely due to the majority previously working in a pre-registration capacity while they applied for permanent registration.⁴ It was estimated by the 7-Point Plan Nursing Review Group* that 1,718 overseas nurses on the temporary register were already employed by the NHS and therefore potentially did not face the same delayed employment checks as former nurses.³

* On 6 April 2020, the Chief Nursing Officer (CNO) for England wrote to the NHS setting out seven actions that would increase nursing and midwifery capacity. The NHS responded to the unprecedented demand quickly and the CNO sought to review the impact of the seven actions through a 7-Point Plan Review Group.

Bank and agency nurses have long been used by NHS trusts to fill the workforce gaps due to staff shortages. However, similar to those on the temporary register, while there was demand in COVID affected settings, with the suspension of routine and elective services there was limited demand for temporary bank or agency staff in non-COVID settings.²² There were also concerns raised in the social care sector that frequent use of bank or agency staff who work across multiple sites could lead to higher infection rates, potentially discouraging providers from employing temporary staff.²³

Data from NHS Digital shows that the nurse headcount increased by 1,459 between March and June 2020,²⁰ compared to a decrease of 918 in the same time period in 2019. Considering the low uptake of the temporary register, this is most likely due to fewer people leaving the workforce during the pandemic. Leaver rates of nurses were around 7.6% in 2016 and have been reducing steadily due to the [NHS retention scheme](#), however there was a dramatic drop over the pandemic.²¹ This mirrors the trend seen during the economic crisis, potentially suggesting it is due to the current economic uncertainty. Alternatively, as stated by Fernandez et al this may be due to the increased sense of professional duty of nurses to work during a pandemic.²⁴

3.1.2 Redeployment

As well as recruiting additional nurses, routine and elective services were suspended and nurses were redeployed in order meet demand in hard-hit settings, mainly critical care and intensive care units (ICU).²⁵ The 7-Point Plan Nursing Review Group states that in a survey completed by 11 directors of nursing, 25% of staff were redeployed which accounted for over 75% of the increase in registered nurse staffing in COVID-19 affected areas.³ A survey of NHS nurses carried out by the Nursing Standard reported that 25% of respondents were redeployed, 22% for operational reasons and 3% to protect the health of themselves or their family.¹⁵

Further, 140 dental nurses were redeployed across Guy's and St Thomas' NHS Trust as part of the Trust's response to COVID-19.²⁶

3.1.3 Nursing students

Nursing students were also used to meet increased demand. In March 2020, 20,317 students in their final year of study were fast tracked into employment²⁰ and students in their second or third year of study were offered extended paid placements to support the NHS workforce.

The paid placements were optional but the majority of students who were eligible opted to enrol. For the most part, the students who did not opt in were either shielding or had vulnerable family members. In July, data from Health Education England (HEE) revealed that 28,108 student nurses and student midwives had opted to take up a paid placement;⁵ this is around 67% of the 42,000 eligible second and third year nursing students estimated by the 7-Point Plan Nursing Review.³

Placements were subject to availability and as with temporary registrants the demand for students varied across care settings. For example, placements were limited in children's nursing so not all students who opted in were offered placements, and

social care did not use students at all. It was observed that many second year students, who were not offered placements until July, were not able to find placements as demand had been less than anticipated and the additional resource was not required.²¹

Student nurses have also had their academic work disrupted by the pandemic. On the academic side, on campus face-to-face teaching was suspended for all students and lessons were moved online.²¹ Clinical placements were cancelled due to shortage in supervisory staff²⁷ and some Higher Education Institutions (HEI) chose not to volunteer second year students for clinical placements due to their course theory requirements.³

Data from NHS Digital show that 16,797 people were recruited from Education and Training as support to doctors, nurses and midwives from March to June 2020.³

3.1.4 Increased demand

Despite efforts from across the system to increase resource, nurses still experienced an increased workload. In a survey of RCN members, 38% of nurses reported that staffing levels had worsened during the pandemic with 30% of nurses reporting working longer hours.¹² Additionally, 34% of nurses reported that they were working at a higher level of responsibility since COVID-19 of which 90% were not being paid accordingly.¹²

In our virtual workshop, it was stressed that demand across different care settings varied vastly. For example, unsurprisingly, COVID-19 related areas such as critical care experienced enormous demand while in other areas, including accident and emergency, demand decreased.²²

The demand in social care was impacted at the start of the pandemic when in an effort to clear acute wards, patients were discharged to care homes. This not only increased the demands on care home staff but 20% of directors of adult social care services believe that the rush to place people resulted in many individuals not being placed in the right home to meet their needs,²⁸ potentially increasing the demands on nurses.

3.1.5 Health and wellbeing

Nguyen et al stated that front-line health care workers have at least a threefold increased risk of COVID-19.²⁹ The risk of infection is reflected in nurse responses to the RCN survey where 74% felt their personal health was at risk,¹² heightened by the negative reports of PPE availability (22% of nurses working in high-risk environments reported not having sufficient eye or face protection).**Error! Bookmark not defined.** As well as their own health, 92% of nurses are concerned about the risk to family members.¹³ This reflects observations of past pandemics by Fernandez et al that nurses experienced heightened anxiety for their own health while caring for infected patients during a pandemic, including fear of placing family and friends in danger which can leave them isolated.²⁴

Unsurprisingly, the increased demands on nurses and the stress associated with exposure to COVID-19 have led to concerns around nurses' physical and mental health. In October 2020, NHS Providers highlighted that trust leaders were particularly concerned about the resilience and wellbeing of their staff, with 34% extremely

concerned about the current level of burnout across the workforce and a further 48% moderately concerned.³⁰ This is mirrored in a survey carried out by the RCN that reports that 76% of nurses say stress levels have increased and 33% are experiencing severe or extremely severe depression, anxiety or stress.¹² Further, excess deaths in care homes, often over a short period of time, have taken an emotional toll on staff.²⁸

Literature has also highlighted the disproportionate impact of COVID-19 on Black, Asian and Minority Ethnic (BAME) communities and health workers.³¹ The Health Service Journal reported that 71% of nurses who died from COVID-19 were from a BAME background,³² despite BAME nurses accounting for only 19% of NMC registered nurses.³³

Data from NHS Digital show that, at a peak in April 2020, the absence rate for nurses and health visitors had risen to 7.4%, equating to 698,195 full-time equivalent (FTE) days, compared to 4.37% in April 2019).³⁴ 36.7% (256,053 FTE days) of the days lost due to sickness absence were COVID related, demonstrating that despite efforts to increase the workforce, significant resource was lost to sickness.

3.1.6 Immigration

The OECD states that in May 2020, over 15% of nurses working in the UK were foreign trained³⁵ and in 2018 the Critical Care National Network Nurse Leads Forum (CC3N) reported that nationally, 9.9% and 16.6% of critical care nurses were from EU and non-EU countries respectively,³⁶ stressing the UK's reliance on foreign trained nurses. COVID-19 has resulted in extensive restrictions on international movement to curb the spread of the virus. This has resulted in significantly reduced migration worldwide, for example the Home Office recorded only around 250 visa applications in April 2020 compared to over 300,000 in April 2019.³⁷ This will have ceased the inflow of overseas nurses to the UK.³⁸

For those already in the UK, test centres for the OSCE were closed but those for whom this was the only outstanding step towards registration could join the temporary register.¹⁸ Despite travel restrictions the number of NMC registered nurses and midwives from outside the EEA increased by 4,065 (5.5%).³³ These were most likely nurses who were already living in the UK and working towards registration prior to the pandemic or some of the 1,985 people who left the temporary register to join the permanent register.³³

Health workers, including nurses and midwives whose visas expired between 31 March and 1 October 2020 were eligible for a free one-year extension to their visa to 'ensure they can focus on fighting coronavirus'.³⁹ The Home Office estimated that around 2,800 migrant doctors, nurses and paramedics and their family members were eligible for this extension.

3.2 Implications of changes

Key points

- The potential impact of the first wave of the COVID-19 pandemic is very uncertain.
- There has been an increase in interest in the nursing profession, demonstrated by an increase in visitors to the NHS career website seeking information on training to be a nurse and an increase in applicants to nursing courses.
- Factors such as nurses' work areas, personal circumstances, age and ethnicity will have influenced nurses' experiences during the first wave and subsequently their future career choices.
- There is likely to be minimal change in the number of former nurses rejoining the profession.
- There are now more critical care trained nurses.
- The economic climate will be a key driver in nurse supply.

3.2.1 Staff turnover – pride in the profession

Nurses have been propelled into the spotlight during the pandemic and the contribution of nurses across the health care sector highlighted to the public. The 'Clap for our Carers' movement and the use of militarised language in media ('front-line workers', 'duty', 'heroic') demonstrate the public's acknowledgement and appreciation of the crucial contribution nurses make. The increased praise and recognition of nurses have likely contributed to them feeling more passionate about their profession (88% of nurses feel passionate about the nursing profession¹²) and valued by the public (74% feel more valued by the general public and 58% by the media¹²). While this increased passion and pride in the nursing profession may encourage some nurses to stay, crucially only 18% of nurses feel valued by the government.¹² Further, the government's rejection of the 12.5% pay increase proposed by the RCN's Fair Pay for Nursing Campaign at the height of the pandemic could potentially lead to nurses feeling that the public's goodwill does not translate into better remuneration. On the other hand, the government was careful to exclude doctors and nurses from the 2021 public sector pay freeze, stating that pay awards for 1.1 million NHS staff will be based on recommendations from the NHS Pay Review Body and Doctors' and Dentists' Review Body in spring 2021.

It was also implied during our stakeholder engagement that the pride felt from appreciation from the public was short-lived and when lockdown measures were relaxed, the public's lack of adherence to social distancing made nurses feel their efforts were undervalued and underappreciated. One stakeholder stated that the public were 'clapping for carers on Thursday and going to the pub on Friday',²¹ suggesting a lack of awareness of or respect for nurses' work.

It should be noted, that much of the positive coverage has focused on the NHS ('Your NHS needs you', 'LightItBlue' and 'Rainbows for the NHS'), potentially leaving nurses working outside the NHS feeling less valued.¹² In fact, while the NHS is being praised, the pandemic has exposed longstanding problems in social care, including issues around low pay and insecure work. Therefore, the media coverage of the pandemic may discourage nurses from joining the social care sector, reducing future nurse labour supply in the sector. This was also a concern raised during our virtual workshop, where 19 out of the 27 participants believed the COVID-19 pandemic could make nurses less likely to join the social care sector, compared to only four believing it would discourage nurses from joining the NHS.

3.2.2 Staff turnover – experience during the pandemic

As stated previously, the experiences of nurses throughout the pandemic will have varied vastly. Factors such as nurses' work areas, personal circumstances, age and ethnicity will all have had an impact on their experiences. Therefore, career choices made in response to the pandemic will vary.

The strain that the pandemic has had on nurses' mental health has been well documented and the International Council of Nurses (ICN) has stated that nurses 'are at high risk for full-blown stress response syndromes, anxiety, depression, post-traumatic stress disorder, chronic illness and burnout'.⁴⁰ The consequences on nurses' mental health may lead some to require sick leave, leave the profession, retire early or reduce their hours, reducing the future supply. The impact on the nurse supply due to the pressure caused by COVID-19 can be monitored by tracking absence rates and employee turnover.

While there is anecdotal evidence from trusts that redeployed nurses are happy to have contributed and learnt new skills^{41,42} and even examples of nurses requesting to transfer to critical care permanently,⁴² there are some desperate to get back to their old roles.⁴³ The Nursing Standard reports that of their survey respondents who were redeployed, only 30% had returned to their original role by June 2020.⁴³ For those unhappy with their position it may push them towards leaving the profession.

The NHS is the largest employer of BAME people in the country.³¹ However, COVID-19 has exposed inequalities in the workforce. An RCN survey highlighted that 54% of BAME nursing staff were considering leaving the profession due to the way they have been treated during the pandemic, compared to 42% of white nursing staff.¹² Further, the same survey reported that BAME staff were less likely to be paid for additional hours: 48% of BAME staff were not paid for additional hours compared to 39% of white staff. BAME nurses make up about 19% of NMC registered nurses,³³ so if BAME nurses choose to leave the profession due to feeling unsupported or undervalued, there could be a significant loss in supply and diversity in the nursing workforce.

3.2.3 Staff turnover – economic uncertainty

Our stakeholder engagement highlighted that the wider economic climate has a significant impact on the career decisions of nurses. A similar reduction in leaver rates as described in section 3.1.1 was seen during the economic crisis.²¹ COVID-19 has

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highlighted that nursing is a stable career with relatively high job security and in circumstances where opportunities outside nursing are limited or nurses' partners or family members are made redundant, struggling to find work or furloughed, nurses are much less likely to leave the profession or reduce their working hours.

3.2.4 Skill mix

The shortage of critical care nurses has long been an issue prior to the pandemic.⁴⁴ The redeployment of staff into critical care settings has upskilled a wider range of nurses than would normally have received training. One stakeholder stated that this provided good career development for nurses and increased the number of critical care trained nurses who are equipped to step in for any future vacancies,²¹ potentially beginning to address the long-term shortage.

3.2.5 Return to practice

The number of former nurses rejoining the nursing workforce is historically quite small, but the temporary register saw many former nurses registering their interest in returning to the workforce during the pandemic. However, in a survey of those on the temporary register, only 20% who left the register in the past 3 years (around 1,200 nurses) and 27% who left in the past 3–5 years (around 400 nurses) stated they were 'highly likely' to join the permanent register following COVID-19.⁴ Those who had practised during the pandemic were most likely to consider joining the permanent register. Coupled with the low employment rate of nurses on the temporary register, nurses may be led to think opportunities are limited or their skills are not required. This suggests that there is unlikely to be any notable change to the inflow of former nurses joining the workforce due to COVID-19.

3.2.6 Profile of nursing as a profession

The positive media coverage and national pride in nurses is likely to raise the profile of nursing as a career and could potentially encourage people to join the profession. Available evidence does suggest there has been increased interest in the profession. The NHS experienced a 138% increase in visitors to their career website seeking information on training to be a nurse between March and June 2020,³¹ applications for nursing degrees have increased 26%²¹ and placed applicants have increased 23% in England.⁴⁵ However, it should be noted that prior to the pandemic, in December 2019, the Department of Health and Social Care announced funding of at least £5,000 for all nurse and midwifery students as part of the government's pledge to increase nurse numbers by 50,000 by 2025.⁴⁶ Further, as stated in paragraph 3.2.3, the economic uncertainty caused by the pandemic has highlighted that nursing is a relatively stable career choice with opportunities. Therefore, it cannot be concluded that the increase in interest in the profession is solely due to COVID-19.

There is a fear that there may be unintended consequences to the portrayal of nurses during the pandemic as heroes, including undermining the highly skilled nature of the work.⁴⁷ This inaccurate representation of the nursing profession may lead to those embarking on a nursing career in response to the pandemic being unprepared or

unsuitable for the challenges of the role. If this turns out to be the case, university and early career attrition rates may increase.

The Council of Deans highlights that the number of placed nursing applicants in 2020 increased from the 2019 cycle across all age groups but was highest (40%) for those aged 35 and over.⁴⁵ Studies^{48,49,50} have shown that mature age students have higher levels of course satisfaction and lower attrition rates, so growing this demographic may reduce overall attrition rates.

Stokes-Parish et al warn that media coverage of the pandemic has reinforced the portrayal of nursing as an inherently feminine profession.⁴⁷ This, alongside the disproportionate impact of COVID-19 on BAME nurses, may leave the nursing profession with a less diverse workforce in the long term.

3.2.7 Student nurses

On the whole, the literature reports positive experiences from students on paid placements,^{51,52,27} with many saying that they feel more prepared to join the workforce and that it has reinforced the decision they made to become a nurse. On the other hand, a study from Robert Gordon University⁵³ and an article from University of Birmingham²⁷ highlight that the transition from students to nurses is a crucial one. Students may not have the usual defined transition from student to qualified nurse and there is a risk that poor support or supervision could increase the numbers who leave the profession early.

For both students who opted in to extended placements and those who did not, the diversion away from academic work and the postponement of clinical placements means they will have to catch up on the required academic or practice hours for registration. This could create a lot of pressure and lead to a delay in them becoming registered nurses, delaying the supply to the workforce.

3.2.8 Overseas nurses

As stated in section 3.1.6, the UK is heavily reliant on recruitment of overseas trained nurses and the government's pledge to deliver 50,000 more nurses includes a focus on international recruitment.⁴⁶ Therefore, the impact that COVID-19 has on international recruitment will have a substantial impact on the nurse supply in England.

In the short term, while COVID-19 travel restrictions remain in place, it is likely that recruitment of international nurses will remain low. People are also less likely to uproot their lives and choose to move abroad during a global pandemic.²¹

In the longer term, following the pandemic the inflow of overseas nurses is likely to depend on the perceived economic stability and job opportunities in the UK.³⁸ The ICN also suggests that the perception overseas of how well funded and robust the UK health care system is, alongside how the UK has dealt with COVID-19, could influence the decision of international nurses choosing where to practice.⁵⁴

The flow of international recruitment can be monitored using Home Office data on successful visa applications. However, it should be noted it will also be influenced by the UK leaving the European Union (EU) and UK economic status so it cannot be concluded that any future impact is due solely to COVID-19.

4 Applying the findings to the nurse supply model

The NSM is a simulation model that produces projections of nurse supply for England with a time horizon of up to 5 to 20 years. This section describes how the research output will be applied to the NSM conceptual model.⁵⁵

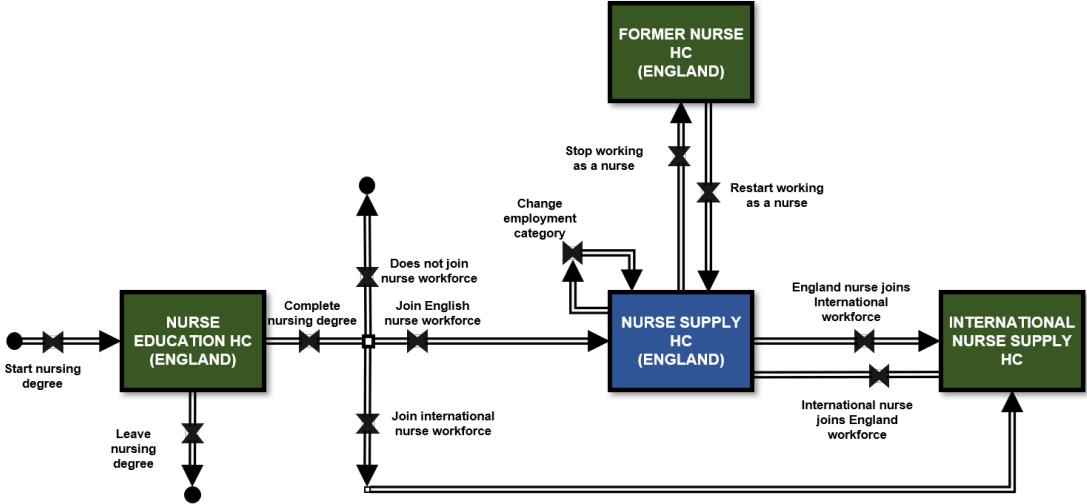
The NSM conceptual model⁵⁶ integrates the economics and stock and flow perspectives on the nurse supply system in order to provide a more comprehensive diagrammatic representation of the system. It has been developed through engagement with a variety of stakeholders from around the nurse supply system and identifies the key factors that affect nurse supply.

The nurse supply system comprises:

- **Student nurses:** Students, nursing associates and nurse apprentices currently enrolled in pre-registration nursing courses.
- **Qualified nurses employed as nurses:** Registered nurses working as a nurse (including those on maternity leave).
- **Former nurses with valid or lapsed registrations:** Qualified nurses who have previously worked as a nurse, but are not currently employed as a nurse, who may or may not be currently registered.
- **Overseas nurses:** Overseas trained nurses registered and working as a nurse in England. Note that this includes nurses from UK outside England, ie Wales, Scotland and Northern Ireland.

The conceptual model represents the four cohorts listed above and the movement between them as four main stocks with a series of flows entering them and exiting them.

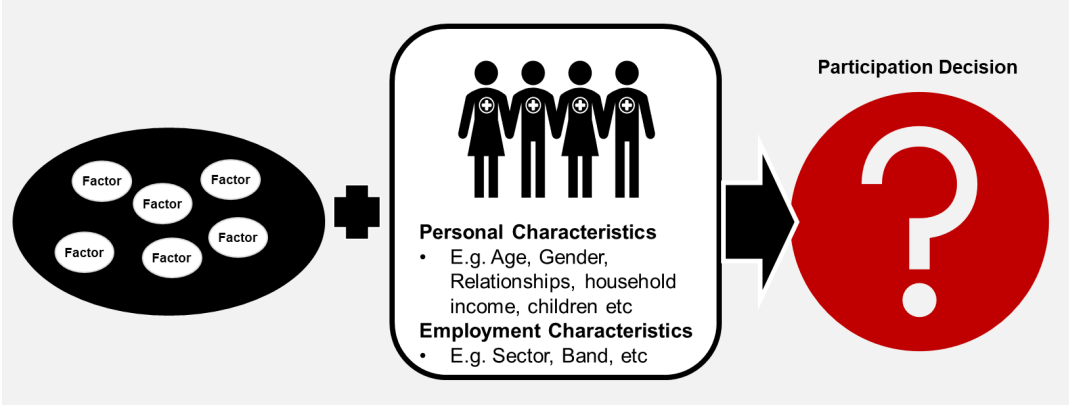
Figure 4: Stock and flow representation of conceptual model



The flows between the stocks will be dependent on the participation decisions made by nurses, such as whether to train to be a nurse, whether to join the English nurse workforce or to leave the register.

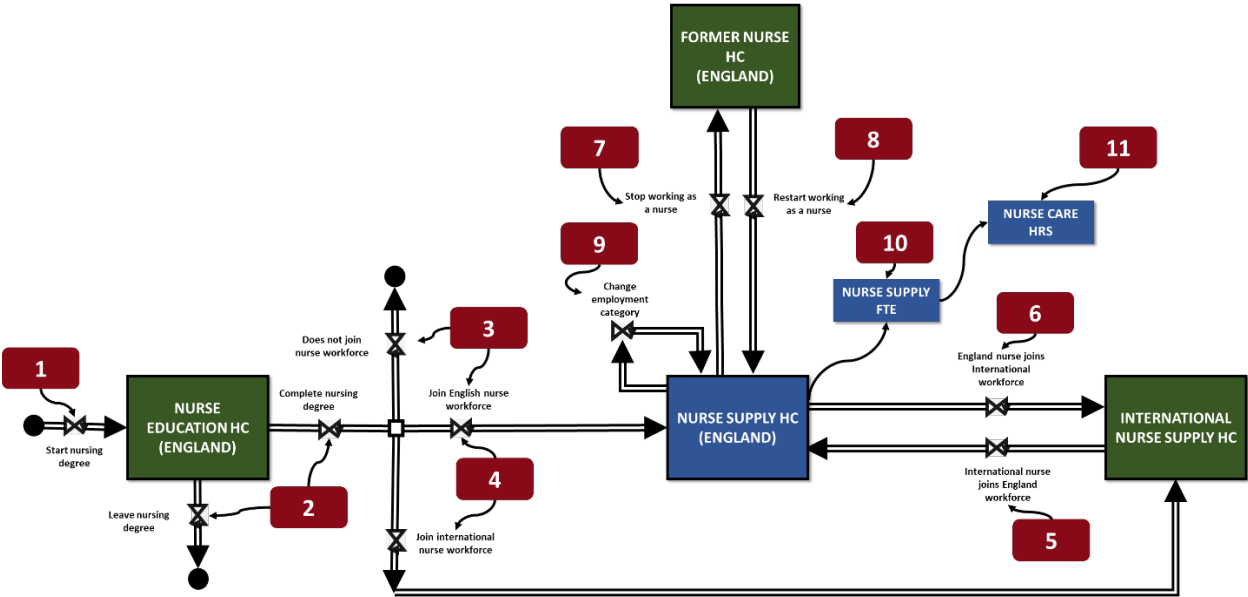
Nurses will move between and within these stocks based on participation decisions they face. The participation decisions of nurses will depend on a number of factors such as relative pay and general unemployment. These factors will have different impacts on different individuals depending on personal circumstance, comprising personal (age, gender, household income) and employment (role, sector, autonomy) characteristics.

Figure 5: Factors, characteristics and participation decisions



The influence of these factors and characteristics is captured in the NSM as an adjustment variable. The adjustment variables are represented in red in Figure 6. Noting that an adjustment variable is not a single value, it can vary over time and can be different for different personal and employment characteristics.

Figure 6: Adjustment variables



The adjustment variables in the conceptual model are defined as:

1. Applications to a nursing degree
2. Percentage of students leave nursing degrees
3. Percentage of students that complete nursing degrees but do not join the nurse workforce
4. Percentage of students that complete nursing degrees and join the international nurse workforce
5. International nurse joins England supply transition matrix
6. Nurse joins international supply transition matrix
7. Percentage stop working as a nurse
8. Percentage restart working as a nurse
9. Nurse supply category transition matrix (nurses moving care settings, region, grade or working patterns but remaining in the nurse workforce)
10. Hours worked per week
11. Care hours delivered per full-time equivalent (FTE) nurse

Figure 7 and Table 3 detail the key factors that, based on the research presented in this report, are likely to influence each of the adjustment variables. Table 3 predicts the impact each factor will have on the adjustment variable.

Section 3 highlights the uncertainty around the impact of COVID-19 on the nurse workforce and that changes due to COVID-19 have impacted all nurses differently. Therefore, the impacts in Figure 7 and Table 3 have been derived based on DAS and stakeholder judgement and should be viewed as a high level assessment only. There are also factors external to COVID-19, such as the government pledge to increase nurse numbers by 50,000 by 2025 and Brexit, that will influence the adjustment variables and nurse supply, which should also be considered in the conceptual model. Further, some changes may only impact the short term while others will have a longer-term impact on supply.

The outlook for the UK economy, in particular the unemployment rate in 2021 and beyond, will have a major impact on the participation decisions of nurses and applications to nursing degrees.

Therefore, to fully understand the impact of COVID-19 on nurse labour supply, relevant data should be collected, monitored and linked to the wider economic picture and the more direct effects of the pandemic. Where available, Table 3 captures the required data identified during our review.

Figure 7: Impact on adjustment variables

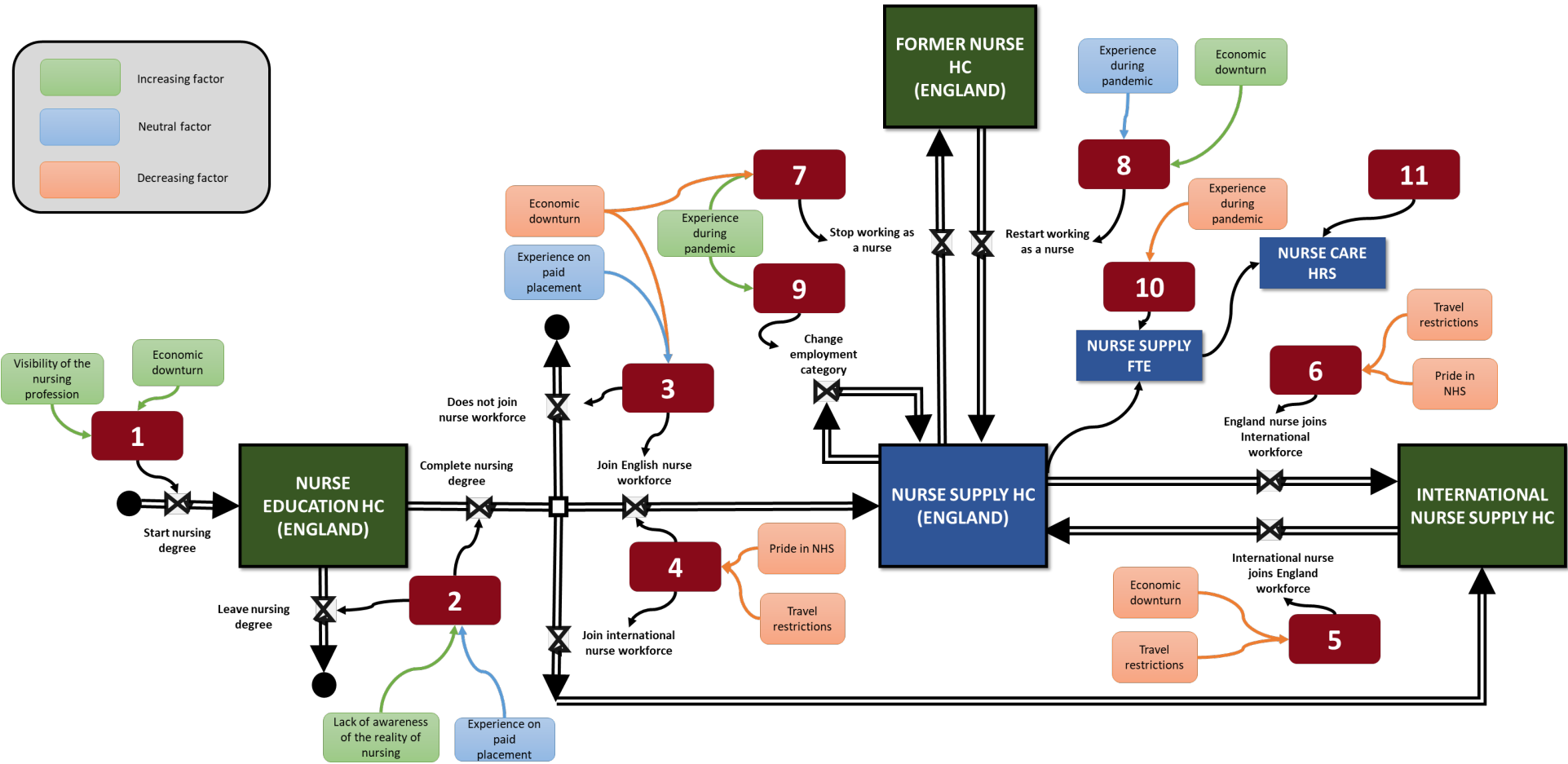












Table 3: Impact on adjustment variables

ID	Adjustment variable	Key influences	Potential impact	Predicated change to adjustment variable (due to COVID-19)	Time frame	External influences	Data
1	Applications to a nursing degree	<ul style="list-style-type: none"> Awareness of nursing career/praise for nurses UK economy 	<ul style="list-style-type: none"> Increased praise and pride in the nursing profession will likely encourage more individuals to apply for a nursing degree. In an unstable economy, nursing is viewed as a 'stable' career with good job security encouraging individuals to apply for a nursing degree. 		<ul style="list-style-type: none"> Short-medium term 	50,000 nurses pledge Changes to student bursaries	<ul style="list-style-type: none"> Applications and acceptances to nursing degrees 2021 onwards Source: UCAS Available: June 2021 (annually)
2	Percentage of students leave nursing degree	<ul style="list-style-type: none"> Experience during paid placement Lack of awareness of the reality of nursing 	<ul style="list-style-type: none"> There is a risk that the increased profile of nursing may encourage those who do not fully appreciate the reality of nursing to apply, potentially increasing attrition in early years of education. 		<ul style="list-style-type: none"> Short-medium term 	50,000 nurses pledge Changes to student bursaries	<ul style="list-style-type: none"> University attrition rates Source: HESA non-continuation data Available: January 2022 (annually)
3	Percentage of students that complete degree do not join nurse workforce	<ul style="list-style-type: none"> Experience on paid placement UK economy 	<ul style="list-style-type: none"> Limited job opportunities outside nursing and the perceived job security of nursing could encourage newly qualified nurses to join the nursing workforce. 		<ul style="list-style-type: none"> Short-medium term 		<ul style="list-style-type: none"> Proportion of newly qualified nurses who join workforce Source: HESA Graduate outcomes survey Available: January 2022 (annually)

ID	Adjustment variable	Key influences	Potential impact	Predicated change to adjustment variable (due to COVID-19)	Time frame	External influences	Data
4	Percentage of students that complete degree join international nurse workforce	<ul style="list-style-type: none"> • Travel restrictions • Pride in NHS 	<ul style="list-style-type: none"> • Travel restrictions have prevented UK nurses seeking opportunities abroad during the pandemic. • The emphasis on 'duty' and 'your NHS needs you' may encourage some nurses to stay in the UK. 		<ul style="list-style-type: none"> • Short term 		<ul style="list-style-type: none"> • Employment location of recent graduates Source: HESA Graduate outcomes survey Available: January 2022 (annually)
5	International nurse joins England supply transition matrix	<ul style="list-style-type: none"> • Travel restrictions • UK economy 	<ul style="list-style-type: none"> • In the short term, travel restrictions have all but halted international recruitment. • In the long term, the perceived number of job opportunities and attractiveness of the UK are likely to be the biggest influencing factors in international recruitment. 		<ul style="list-style-type: none"> • Short-medium term 	Brexit	<ul style="list-style-type: none"> • Successful tier 2 skilled visa applications Source: The Home Office • Number of overseas trained nurses on NMC register Source: NMC Register

ID	Adjustment variable	Key influences	Potential impact	Predicated change to adjustment variable (due to COVID-19)	Time frame	External influences	Data
6	Nurse joins international supply transition matrix	<ul style="list-style-type: none"> • Travel restrictions • Pride in NHS 	<ul style="list-style-type: none"> • Travel restrictions have prevented UK nurses seeking opportunities abroad during the pandemic. • The emphasis on 'duty' and 'your NHS needs you' may encourage some nurses to stay in the UK. • The extension of visas for health care workers will have reduced the number of foreign-born nurses leaving the UK, but this may only be for the short term. 		<ul style="list-style-type: none"> • Short term 	Brexit	<ul style="list-style-type: none"> • NMC registered nurses with overseas address <p>Source: NMC Register</p>

ID	Adjustment variable	Key influences	Potential impact	Predicated change to adjustment variable (due to COVID-19)	Time frame	External influences	Data
7	Percentage stop working as a nurse	<ul style="list-style-type: none"> • Experience during pandemic • UK economy 	<ul style="list-style-type: none"> • COVID-19 has caused a sharp decrease in leaver rates but this is thought to be due to people delaying leaving during the pandemic. • It is possible that some nurses who have experienced high levels of stress, depression or anxiety may leave the workforce or retire early. • However, the lack of other job opportunities outside nursing may encourage some to stay, as was seen during the recession. 		<ul style="list-style-type: none"> • Short term 	50,000 nurses pledge	<ul style="list-style-type: none"> • NHS nurse turnover Source: NHS Digital • Social care nurse turnover Source: Skills for Care Available: October 2021 (annually) • Views on nursing/working conditions Source: RCN Employment Survey • Number of nurses who let registration lapse Source: NMC Register
8	Percentage restart working as a nurse	<ul style="list-style-type: none"> • Experience during pandemic • UK economy 	<ul style="list-style-type: none"> • The number of nurses who return to the workforce is nominal and COVID-19 is not anticipated to significantly impact this. 				<ul style="list-style-type: none"> • Number of people enrolled in Return to Practice programmes Source: HESA

ID	Adjustment variable	Key influences	Potential impact	Predicated change to adjustment variable (due to COVID-19)	Time frame	External influences	Data
9	Nurse supply category transition matrix	<ul style="list-style-type: none"> • Experience during pandemic 	<ul style="list-style-type: none"> • Overall, a lot of people are expected to reflect on their role potentially provoking increased movement within the nurse supply stock. 		<ul style="list-style-type: none"> • Short term 		<ul style="list-style-type: none"> • NHS nurse turnover Source: NHS Digital • Social care nurse turnover Source: Skills for Care Available: October 2021 (annually) • Views on nursing/working conditions Source: RCN Employment Survey
10	Hours worked per week	<ul style="list-style-type: none"> • Experience during pandemic 	<ul style="list-style-type: none"> • It is possible that some nurses who have experienced high levels of stress, depression or anxiety may reduce working hours. 		<ul style="list-style-type: none"> • Short-medium term 		<ul style="list-style-type: none"> • NHS staff in post data Source: NHS Digital • Social care workforce data Source: Skills for Care • Working hours Source: RCN Employment Survey

5 Conclusion

The project, undertaken between March and November 2020, has examined the available literature, data and stakeholder engagement to explore the potential impact of COVID-19 on nurse supply. It has identified a number of significant changes to the demands on nurses, their ways of working to meet these demands and their self-perception of their career, as well as the public's perception of the nursing profession. Further, the project has enabled a deep understanding of how nurses have been impacted by these changes and the potential implications they have on future nurse supply.

The project concludes that COVID-19 has provoked substantial change across the nursing supply system that has impacted both those considering a career in nursing and current and former nurses from all sectors. The most significant changes are noted to be the increased workload and stress on nurses, new ways of working and perceptions of the nursing profession on the part of both the public and nurses themselves. The contribution of nurses to the pandemic has been highly visible and has challenged the public's perceptions of the role, highlighting not only the importance of nursing for the delivery of an effective health care system but also the highly skilled nature of the work.

This report discussed the potential impact that the identified changes could possibly have on individuals and future nurse supply. However, a clear conclusion from the project is that the impact COVID-19 will have on nurse supply is very uncertain, especially in the absence of quantitative data. The research shows that the pandemic will have a different impact on individuals and their career decisions depending on factors such as their experience during the pandemic, personal circumstances, age and ethnicity. For example, while the pandemic shone a positive light on the NHS, it exposed a number of existing issues in the social care sector, so it cannot be expected that the impact on future supply will be consistent systemwide. Further the evidence that COVID-19 has disproportionately impacted BAME nurses also highlights that the impact on future supply will vary by ethnicity.

Our stakeholder engagement highlighted that the economic climate has a significant impact on nurses' career decisions. This suggests that the economic downturn induced by the pandemic could be one of the most impactful and long-term changes due to COVID-19 that influence future nurse supply.

The conclusions presented in this report have been derived from available literature and stakeholder judgement. In the absence of quantitative data at the time of the research, it is not possible to measure the full impact of the pandemic. It is therefore recommended that when the data identified in this report become available, they are monitored and carefully analysed to understand the systemwide impact. Even when these data become available, the implications of external factors including the government's 50,000 nurses pledge and Brexit should be considered.

Appendix A: Literature reviewed

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
1	Covid-19 emergency temporary registration policy	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers	Policy	NMC		01-Mar-20
2	NMC temporary register reaches incredible milestone as more than 10,000 sign up to fight Covid-19	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers	Press release	NMC		17-Apr-20
3	Analysis of the NMC COVID-19 Temporary Register	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers	Publication	NMC		02-Jul-20
4	Moving from temporary registration to full registration	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers	Webpage	NMC		visited 24/09/20
5	Building a better future for nursing	UK	Systemwide	Nurse perceptions (pay, feeling valued and working conditions)	Publication	RCN	Antonia Borneo, Amy Dalrymple, Charli Hadden, Abbie Johnson, Siân Kiely, John Knape, Paul Oakley, Jade Oorthuysen-Dunne and Lisa Turnbull	Aug-20
6	Survey of UK nurses and midwives highlights their concerns about health, training and workload during COVID-19.	UK	Systemwide	Nurse perceptions	Article	King's College London		21-Apr-20
7	Risk of COVID-19 among front-line health workers and the general community: a prospective cohort study	UK/USA	Systemwide	Health and Wellbeing (risk of COVID-19 exposure)	Journal article	The Lancet Public Health	Long H Nguyen, David A Drew, Mark S Graham et al	31-Jul-20

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
8	Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic	Worldwide	Systemwide	Nurse perceptions			Professor Ritin Fernandez, Heidi Lord , Professor Elizabeth Halcomb, Professor Lorna Moxham, Dr Rebekkah Middleton, Dr Ibrahim Alananzeh, Laura Ellwood	
9	Joint statement on developing immediate critical care nursing capacity	UK	NHS	Redeployment	Statement	Various	Various	25-Mar-20
10	Redeployed nurses proud to say 'we were there'	UK	NHS	Redeployment	Web article	Barking, Havering and Redbridge University Hospitals		29-Jun-20
11	Redeployment: 'Grab a clean set of scrubs and report to ITU'	UK	NHS	Redeployment	Blog	Barts Health Trust	Zara Zaman	16-Apr-20
12	Stories from the front line: Community nursing to COVID Intensive Care Unit (ICU) - Lia's Story	UK	NHS	Redeployment	Blog	Solent NHS Trust	Lia Wadsworth	16-Jul-20
13	Keeping redeployed staff connected and ready for further waves of COVID-19	UK	NHS	Redeployment	Web article	Nursing Standard	Kim Tolley and Elizabeth Tysoe	28-Aug-20
14	How dental nurses have been filling in	UK	NHS	Redeployment	Web page	Guy's and St Thomas' NHS Foundation Trust		8/09/20 (visited 02/10/2020)
15	Dental nurse redeployed to Adult Critical Care – Christian's experience	UK	NHS	Redeployment	Web page	Barts Health Trust		29/04/2020

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
16	Record numbers of registered nursing and midwifery professionals but potential stormy waters ahead, warns NMC	UK	Systemwide	Workforce Numbers	Press release	NMC		09-Jul-20
17	COVID-19 and the International Supply of Nurses	Worldwide	Systemwide	Overseas nurses	Report	International Council of Nurses	Professor James Buchan, Adjunct Professor, University of Technology	09-Jul-20
18	We are the NHS: People plan for 2020/2021 - action for us all	UK	NHS	Inequalities, Health and Wellbeing, Flexible working	Publication	NHS		01-Jul-20
19	Exclusive: deaths of NHS staff from covid-19 analysed	UK	NHS	Health and Wellbeing, Inequalities	Web article	HSJ	Tim Cook, Emira Kursumovic, Simon Lennane	22-Apr-20
20	Robert Gordon University study exploring health and social care students' and graduates' experiences of going into practice early during the Covid-19 pandemic.	UK	NHS/ Social Care	Students, Health and Wellbeing	Blog	Council of Deans	Dr Flora Douglas, Professor Catriona Kennedy	12-Jun-20
21	State of the NHS provider sector 2020: Survey findings	UK	NHS	Health and Wellbeing, Increased workload				Oct-20
22	HEE COVID-19 student data collections to support paid placement deployment	UK	NHS	Students	Web article	HEE		
23	Student nurse case study - Charles Tick	UK	NHS	Students	Case study	HEE		
24	Student nurse case study - Hollie Shepley	UK	NHS	Students	Case study	HEE		
25	Student nurse case study - Temi Banjo	UK	NHS	Students	Case study	HEE		

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
26	Emergency standards for nursing and midwifery education	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers		NMC		25-Mar-20
27	NHS Sickness Absence Rates May 2020	UK	NHS	Health and Wellbeing	Data	NHS Digital		24-Sep-20
28	NHS Sickness Absence - COVID-19 related absence, May 2020	UK	NHS	Health and Wellbeing	Data	NHS Digital		24-Sep-20
29	NHS Workforce Statistics, June 2020 Covid-19 supplementary information	UK	NHS	Workforce Numbers	Data	NHS Digital		24-Sep-20
30	How COVID-19 has magnified some of social care's key problems	UK	Social Care	Health and Wellbeing	Publication	The King's Fund	Simon Bottery	25-Aug-20
31	Adult social care and COVID-19: Assessing the impact on social care users and staff in England so far	UK	Social Care	Health and Wellbeing	Briefing	The Health Foundation	Hodgson H, Grimm F, Vestesson E, Brine R, Deeny S	Jul-20
32	Agency nurses: trapped in a pandemic staffing paradox	UK	Private	Agency workers, Suspension of routine care	Web article	Nursing Standard	Alison Moore	17-Jun-20
33	RCN COVID-19 Staff Testing Survey Findings Summary Briefing	UK	Systemwide	COVID 19 Testing	Report	RCN		
34	NMC stands up for social care nursing	UK	Social Care	Social Care, Nurse perceptions	Conference notes	NMC	Andrea Sutcliffe, Trudi Barnett	18-Jun-20
35	COVID-19 and student nurses: A view from England	UK	Systemwide	Students	Journal Article	School of Nursing, University of Birmingham & University Hospitals Birmingham NHS Foundation Trust	Amelia Swift, Louise Banks, Amintha Baleswaran, Nicholas Cooke, Cerys Little, Linda McGrath, Ronnie Meechan-Rogers, Alice Neve, Helen Rees, Amy Tomlinson, Grace Williams	16-Apr-20

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
36	Has your COVID-19 experience made you rethink your nursing career?	UK	NHS	Redeployment, Nurse perceptions	Web article	Nurse Standard	Erin Dean	28-Aug-20
37	The Coronavirus Act 2020	UK	Systemwide	Temporary register, former nurses	Legislation	UK Government		25-Mar-20
38	Angels and Heroes: The Unintended Consequence of the Hero Narrative	Australia	Systemwide	Nurse perceptions	Commentary	Journal of Nursing Scholarship	Jessica Stokes-Parish et al	08-Jul-20
39	ICN calls for government action to stop attacks on nurses at a time when their mental health and wellbeing are already under threat because of COVID-19 pandemic	Worldwide	Systemwide	Health and Wellbeing	Web article	International Council of Nurses		
40	Briefing: UCAS statistics on placed applicants 28 days after A-level results day	UK	Systemwide	Students	Briefing	Council of Deans	Dorothea Baltruks	10-Sep-20
41	Contribution of migrant doctors and nurses to tackling COVID-19 crisis in OECD countries	Worldwide	Systemwide	Overseas nurses	Report	OECD	Stefano Scarpetta, Jean-Christophe Dumont, Karolina Socha-Dietrich	13-May-20
42	Statistics relating to COVID-19 and the immigration system, May 2020	UK	Systemwide	Overseas nurses	Report	Home Office		28-May-20
43	Mid-year update, 1 April – 30 September 2020	UK	Systemwide	Workforce numbers	Report	NMC	-	01-Sep-20
44	Passionate but pushed to the limit	UK	Systemwide	Health and Wellbeing	Web article	RCN		21-Aug-20
45	7-Point Plan Nursing Review Group: Final Report	UK	Systemwide	Temporary register, former nurses, overseas nurses, workforce numbers, students, redeployment	Report	7-Point Plan Nursing Review Group		Nov-20

ID	Reference title	Country	Sector	Themes	Reference type	Organisation	Author(s)	Date
46	Impact of coronavirus in care homes in England: 26 May to 19 June 2020	UK	Social Care	Agency workers	Report	ONS		Jul-20

Appendix B: Stakeholder interview questions

Workforce

No.	Question
1	<p>What changes have been made to the nursing workforce due to COVID-19?</p> <p>Areas of interest include but not limited to:</p> <ul style="list-style-type: none"> • Workforce size • Temporary registrants joining workforce • Students joining workforce • Redeployment • Change in demand (both type and amount) • Absenteeism rates
2	When and where were these changes made?
3	Are the changes still in place?
4	Are any of the changes likely to be permanent?
5	Did you have the opportunity to design how these changes were implemented?
6	Was any training or assistance provided to the workforce to adapt to the changes?
7	What has been the impact of the changes on nurses?
8	Do you know of any relevant data or research on experience and perception of nurses during COVID-19?
9	How will this experience influence the career decisions of nurses?
10	Has there been a change in staff turnover during COVID-19? Do you think this is due to COVID-19?
11	Do you think COVID-19 and the resultant changes will have a long-term impact on the supply of nurses in the future?
12	How do you think we can monitor the impact going forwards?

13	Are there any other individuals or organisations that you would recommend we contact?
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Education

No.	Question
1	<p>How has the student nursing curriculum and student experience changed due to COVID-19?</p> <p>Areas of interest include but not limited to:</p> <ul style="list-style-type: none"> • Paid placements • Clinical placements • Nurse mentors • Academic work
2	When and where were these changes made?
3	Are the changes still in place?
4	Are any of the changes likely to be permanent?
5	What assistance was provided to students to adapt to the changes?
6	How have the changes impacted the students?
7	How has the experience impacted the students' perception of a career in nursing?
8	Do you know of any relevant data or research on experience and perceptions of student nurses during COVID-19?
9	What impact do you think the experience will have on the students' career choices within nursing?
10	Is there evidence (anecdotal or otherwise) of what is happening in practice?
11	Has there been any change to the attrition rate this year? Do you think this is due to COVID-19?
12	Has there been any change in the number or quality of applications to nursing this year? Do you think this is due to COVID-19?

13	Do you think COVID-19 and the resultant changes will influence the decisions of potential nursing students?
14	How do you think we can monitor the impact going forwards?
15	Are there any other organisations that you would recommend we contact?

6 References

- ¹ NHS Digital. NHS Workforce Statistics [webpage]. *NHS Digital*; 2020 (<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-workforce-statistics/september-2020>).
- ² NHS Digital. NHS Vacancy Statistics England [webpage]. *NHS Digital*; 2020 (<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-vacancies-survey/april-2015---september-2020>).
- ³ CNO 7-Point Plan Nursing Review Group. *Final Report*. CNO 7-Point Plan Nursing Review Group; 2020.
- ⁴ Nursing and Midwifery Council. *Analysis of the NMC COVID-19 Temporary Register*. NMC; 2020.
- ⁵ Health Education England. HEE COVID-19 student data collections to support paid placement deployment [webpage]. *HEE*; 2020. (www.hee.nhs.uk/coronavirus-covid-19/hee-covid-19-student-data-collections-support-paid-placement-deployment).
- ⁶ UK Government. *The Coronavirus Act 2020*. (<https://www.legislation.gov.uk/ukpga/2020/7/contents/enacted>)
- ⁷ Gershlick B and Charlesworth A. *Health and social care workforce: Priorities for the new government*. Health Foundation; 2019 (<https://www.health.org.uk/publications/long-reads/health-and-social-care-workforce>).
- ⁸ RCN. Passionate but pushed to the limit. *Royal College of Nursing London*; 21 August 2020 (www.rcn.org.uk/news-and-events/news/uk-passionate-but-pushed-to-the-limit-covid-19-200820).
- ⁹ Marangozov R, Williams M and Buchan J. *The labour market for nurses in the UK and its relationship to the demand for, and supply of, international nurses in the NHS*. Institute for Employment Studies; 2016.
- ¹⁰ House of Commons Health Committee. *Education, training and workforce planning*. London: The Stationery Office Limited; 2012.
- ¹¹ Health Foundation. *Fit for purpose? Workforce policy in the English NHS*. Health Foundation; 2016 (www.health.org.uk/sites/default/files/FitForPurpose.pdf).
- ¹² Borneo A, Dalrymple A, Hadden C, Johnson A, Kiely S, Knappe J, et al. *Building a better future for nursing*. RCN; 2020.
- ¹³ King's College London. Survey of UK nurses and midwives' highlights their concerns about health, training and workload during COVID-19 [webpage]. *KCL*; 2020

(<https://www.kcl.ac.uk/news/survey-of-uk-nurses-and-midwives-highlights-their-concerns-about-health-training-and-workload-during-covid-19>)

¹⁴ RCN. *RCN COVID-19 Staff Testing Survey Findings Summary Briefing*. RCN; 2020.

¹⁵ Nursing Standard. Has your COVID-19 experience made you rethink your nursing career? *Nursing Standard*; 28 August 2020 (<https://rcni.com/nursing-standard/newsroom/analysis/has-your-covid-19-experience-made-you-rethink-your-nursing-career-164221>).

¹⁶ SAGE. SAGE22_20200401_SPI-M_Nowcast_S0093_for_release. *SAGE*; 1 April 2020 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/917243/SAGE22_20200401_SPI-M_Nowcast_S0093_for_release.pdf).

¹⁷ NHS England. Statistical Press Notice: Monthly critical care beds and cancelled urgent operations (MSITREP) data, England. *NHS England*; 9 April 2020. (www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2020/04/MSitRep-SPN-FEBRUARY-2020-auY71.pdf).

¹⁸ Nursing and Midwifery Council. Covid-19 emergency temporary registration policy [webpage]. *NMC*; 2020 (<https://www.nmc.org.uk/news/coronavirus/temporary-registration/>).

¹⁹ Nursing and Midwifery Council. NMC temporary register reaches incredible milestone as more than 10,000 sign up to fight Covid-19. *NMC*; 1 April 2020 (<https://www.nmc.org.uk/news/press-releases/nmc-temporary-register-reaches-incredible-milestone-more-than-10000/>).

²⁰ NHS Digital. NHS Workforce Statistics, June 2020 Covid-19 supplementary information [webpage]. *NHS Digital*; 2020 (<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-workforce-statistics/june-2020>).

²¹ DAS. *Impact and Implications of COVID-19 on Nurse Supply - Interview Log.xlsx* DAS; 2020 (unpublished).

²² Moore A. Agency nurses: trapped in a pandemic staffing paradox. *Nursing Standard*; 17 June 2020 (<https://rcni.com/nursing-standard/features/agency-nurses-trapped-a-pandemic-staffing-paradox-162121>).

²³ Office for National Statistics. *Impact of coronavirus in care homes in England: 26 May to 19 June 2020*. ONS; 2020 (www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/impactofcoronavirusincarehomesinenglandvivaldi/26mayto19june2020).

²⁴ Fernandez R, Lord H, Halcomb E, Moxham L, Middleton R, Alananzeh I, and Ellwood L. Implications for COVID-19: a systematic review of nurses' experiences of working in

acute care hospital settings during a respiratory pandemic. *Int J Nurs Stud.* 2020; 111: 103637.

²⁵ NHS England and NHS Improvement. Joint statement on developing immediate critical care nursing capacity. *NHS*; 26 March 2020 (www.england.nhs.uk/coronavirus/publication/joint-statement-on-developing-immediate-critical-care-nursing-capacity/).

²⁶ Guy's and St Thomas' NHS Foundation Trust. How dental nurses have been filling in. *Guy's and St Thomas' NHS Foundation Trust*; 8 September 2020 (www.guysandstthomas.nhs.uk/news-and-events/2020-news/september/20200908-how-dental-nurses-have-been-filling-in.aspx).

²⁷ Swift A, Banks L, Baleswaran A, Cooke N, Little C, McGrath L, et al. COVID-19 and student nurses: A view from England. *Journal of Clinical Nursing.* 2020; 29: 17–18.

²⁸ Bottery, S. *How Covid-19 has magnified some of social care's key problems.* The King's Fund; 2020 (<https://www.kingsfund.org.uk/publications/covid-19-magnified-social-care-problems>).

²⁹ Nguyen LH, Drew DA, and Graham MS. Risk of COVID-19 among front-line health workers and the general community: a prospective cohort study. *The Lancet Public Health.* 2020; 5(9): E475–E483.

³⁰ NHS Providers. *State of the provider sector 2020: survey findings.* NHS Providers; 2020 (<https://nhsproviders.org/media/690250/the-state-of-the-nhs-provider-sector-october-2020.pdf>).

³¹ NHS England. *We are the NHS: People Plan for 2020/2021 - action for us all.* NHS England; 2020 (<https://www.england.nhs.uk/publication/we-are-the-nhs-people-plan-for-2020-21-action-for-us-all/>).

³² Cook T, Kursumovic E, and Lennane S. Exclusive: deaths of NHS staff from covid-19 analysed. *HSJ*; 22 April 2020 (www.hsj.co.uk/exclusive-deaths-of-nhs-staff-from-covid-19-analysed/7027471.article).

³³ Nursing and Midwifery Council. *Mid-year update, 1 April–30 September 2020.* NMC; 2020 (<https://www.nmc.org.uk/about-us/reports-and-accounts/registration-statistics/>).

³⁴ NHS Digital. NHS Sickness Absence Rates April 2020 Monthly Tables [webpage] *NHS Digital*; 2020 (<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-sickness-absence-rates>).

³⁵ OECD. Contribution of migrant doctors and nurses to tackling COVID-19 crisis in OECD countries. OECD; 2020 (https://read.oecd-ilibrary.org/view/?ref=132_132856-kmg6jh3kvd&title=Contribution-of-migrant-doctors-and-nurses-to-tackling-COVID-19-crisis-in-OECD-countries).

47 Nurse supply model: exploring the potential impact of the first wave of the COVID-19 pandemic on nurse supply

-
- ³⁶ Critical Care Networks - National Nurse Leads. *National Critical Care Nursing and Outreach Workforce Survey Overview Report*. CC3N; 2018 (www.cc3n.org.uk/uploads/9/8/4/2/98425184/national_critical_care_nursing_and_outreach_workforce_survey_report_2018_final.pdf).
- ³⁷ Home Office. Statistics relating to COVID-19 and the immigration system. Home Office; 2020 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/887808/statistics-relating-to-covid-19-and-the-immigration-system-may-2020.pdf).
- ³⁸ Health Foundation. *Thinking local and global: exploring the UK's reliance on international nurses and the impact of COVID-19* [webpage]. Health Foundation; 2020 (www.health.org.uk/news-and-comment/charts-and-infographics/thinking-local-and-global-exploring-the-uks-reliance-on-international-nurses).
- ³⁹ Home Office. NHS frontline workers visas extended so they can focus on fighting coronavirus. *Home Office*; 31 March 2020 (www.gov.uk/government/news/nhs-frontline-workers-visas-extended-so-they-can-focus-on-fighting-coronavirus).
- ⁴⁰ International Council for Nurses. *ICN calls for government action to stop attacks on nurses at a time when their mental health and wellbeing are already under threat because of COVID-19 pandemic*. ICN; 29 April 2020 (www.icn.ch/news/icn-calls-government-action-stop-attacks-nurses-time-when-their-mental-health-and-wellbeing).
- ⁴¹ Barking, Havering and Redbridge University Hospitals. Redeployed nurses proud to say 'we were there'. *Barking, Havering and Redbridge University Hospitals*; 29 June 2020 (www.bhrhospitals.nhs.uk/news/redeployed-nurses-proud-to-say-we-were-there-2444/).
- ⁴² Tolley K, and Tysoe, E. Keeping redeployed staff connected and ready for further waves of COVID-19. *Nursing Standard*; 22 August 2020 (<https://rcni.com/nursing-standard/careers/my-job/keeping-redeployed-staff-connected-and-ready-further-waves-of-covid-19-164961>).
- ⁴³ Dean E. Has your COVID-19 experience made you rethink your nursing career? *Nursing Standard*; 28 August 2020 (<https://rcni.com/nursing-standard/newsroom/analysis/has-your-covid-19-experience-made-you-rethink-your-nursing-career-164221>).
- ⁴⁴ Khan N, Jackson D, Stayt L, and Walthall H. Factors influencing nurses' intentions to leave adult critical care settings. *Nurse Crit Care*. 2019; 24(1): 24–32.
- ⁴⁵ Baltruks D. *Briefing: UCAS statistics on placed applicants 28 days after A-level results day*. Council of Deans of Health; 2020 (<https://councilofdeans.org.uk/wp-content/uploads/2020/09/Briefing-UCAS-figures-September-2020.pdf>).
- 48 Nurse supply model: exploring the potential impact of the first wave of the COVID-19 pandemic on nurse supply

⁴⁶ The Conservative and Unionist Party. The Conservative and Unionist Party Manifesto 2019 [webpage]. *The Conservative and Unionist Party*; 2019 (<https://www.conservatives.com/our-plan>)

⁴⁷ Stokes-Parish J, Elliott R, Rolls K, and Massey DL. Angels and Heroes: The Unintended Consequence of the Hero Narrative. *Journal of Nursing Scholarship*. 2020; 52(5): 462–466.

⁴⁸ Mulholland J, Anionwu E, Atkins R, Tappern M, and Franks PJ. Diversity, attrition and transition into nursing. *Journal of Advanced Nursing*. 2008; 64(1): 49–59.

⁴⁹ Kenny A, Kidd T, Nankervis K, and Connell S. Mature age students access, entry and success in nurse education: An action research study. *Contemporary nurse*. 2011; 38(1-2): 106–18.

⁵⁰ Ansari WE. Student nurse satisfaction levels with their courses: part I - effects of demographic variables. *Nurse Education Today*. 2002; 22(2): 159–70.

⁵¹ Tick C. *International day of the nurse: Student nurse case study*. Health Education England; 2020 (<https://healtheducationengland.sharepoint.com/Comms/Digital/Shared%20Documents/Forms/AllItems.aspx?id=%2FComms%2FDigital%2FShared%20Documents%2Fhee%2E nhs%2Euk%20documents%2FWebsite%20files%2FCovid%2D19%20N%26M%2FCase%20studies%2FNurse%20case%20study%20%2D>)

⁵² Shepley H. *International year of the nurse 2020: Student nurse case study*. Health Education England; 2020 (<https://healtheducationengland.sharepoint.com/Comms/Digital/Shared%20Documents/Forms/AllItems.aspx?id=%2FComms%2FDigital%2FShared%20Documents%2Fhee%2E nhs%2Euk%20documents%2FWebsite%20files%2FCovid%2D19%20N%26M%2FCase%20studies%2FNurse%20case%20study%20%2D>).

⁵³ Douglas D, and Kennedy P. *Robert Gordon University study exploring health and social care students' and graduates' experiences of going into practice early during the Covid-19 pandemic*. Council of Deans of Health; 2020 (<https://councilofdeans.org.uk/2020/06/robert-gordon-university-study-exploring-health-and-social-care-students-and-graduates-experiences-of-going-into-practice-early-during-the-covid-19-pandemic/>).

⁵⁴ Buchan J. *COVID-19 and the International Supply of Nurses*. International Council of Nurses; 2020.

⁵⁵ DAS. *Nurse Supply Model Project Progress Working Paper*. DAS; 2020.

⁵⁶ DAS. *Nurse Supply Model: Conceptual Model Description*. Unpublished; 2020 (DAS245a-Conceptual Model Description-Draft1.pdf).

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About the Health Foundation

The Health Foundation is an independent charity committed to bringing about better health and health care for people in the UK.

Our aim is a healthier population, supported by high quality health care that can be equitably accessed. We learn what works to make people's lives healthier and improve the health care system. From giving grants to those working at the front line to carrying out research and policy analysis, we shine a light on how to make successful change happen.

We make links between the knowledge we gain from working with those delivering health and health care and our research and analysis. Our aspiration is to create a virtuous circle, using what we know works on the ground to inform effective policymaking and vice versa.

We believe good health and health care are key to a flourishing society. Through sharing what we learn, collaborating with others and building people's skills and knowledge, we aim to make a difference and contribute to a healthier population.

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