The Exchequer costs and benefits of student loan forgiveness for nurses

Report for the Royal College of Nursing, May 2022
Overview of the analysis

London Economics were commissioned by the Royal College of Nursing to assess the Exchequer impact of the HE funding system changes from the Department for Education’s response to the Augar Review. Relative to the Augar system, we also assess the impact of introducing student loan forgiveness for nursing students working in the NHS post-graduation.

- We focus on the 2021-22 cohort* of first-year English-domiciled students starting full-time first-degree nursing courses at Higher Education Institutions (HEIs) in England. The impact of loan forgiveness for nursing students is estimated both based on the actual size of the cohort, as well as under a hypothetical increase in the size of the cohort (assuming that the changes to the funding system would result in an increase in the number of students starting nursing courses).

- In terms of Exchequer impacts, we estimate:
  - The Exchequer costs associated with the cohort from providing public fee and maintenance loans to students (through the Student Loans Company) and teaching grant funding to English HEIs (through the Office for Students); and
  - The Exchequer benefit associated with graduates from the cohort who enter work in the NHS, in terms of the cost savings associated with reduced reliance on Agency/Bank staff - measured over the first 10 years post-graduation.

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* The underlying student data are based on data (published by the Higher Education Statistics Agency (HESA)) for the 2020-21 academic year; in other words, in the absence of more recent data, we assume the same size and characteristics of the 2021-22 cohort as for the 2020-21 cohort. The analysis includes students studying at higher education institutions only (excluding further education colleges, but including alternative providers).
Funding scenarios

We modelled three funding scenarios:

**CURRENT SYSTEM**

This system presents the current fees and funding arrangements for English domiciled students starting undergraduate qualifications in 2021-22.

Throughout the analysis (for all scenarios), we assume a new lower real discount rate of -1.1% (instead of the previous +0.7% rate). This is in line with recent changes implemented by the Department for Education.

**AUGAR SYSTEM**

This presents the announced changes under the Department for Education’s response to Augar, including:

- The reduction in the repayment threshold to £25,000, frozen until 2026-27 (inclusive), and increasing with Retail Price Index (RPI) inflation thereafter (instead of (higher) average earnings growth) – this is also referred to as the ‘stealth tax’ of the Augar system;
- The removal of real interest rates, both during and after study; and
- The extension of the repayment period by 10 years, to 40 years

**AUGAR SYSTEM WITH LOAN FORGIVENESS**

This system assumes the same loan repayment terms as under the Augar system, as well as the introduction of loan forgiveness for nursing graduates working in the NHS, where:

- 30% of their loan balance is written off after 3 years in the NHS;
- 70% of their loan balance is written off after 7 years in the NHS; and
- 100% of their loan balance is written off after 10 years in the NHS.

Loans for graduates never working in the NHS (or for less than 3 years) would only be written off (fully) after 40 years (as under the Augar system).

*See [here](#) for more detail on the forthcoming changes to the system under the Department’s response to the Augar Review.*
Current funding system (Baseline)
Current funding system: Totals

Under the current funding system, the total Exchequer cost of funding the 22,240 students in the 2021-22 nursing cohort stands at £697m. In terms of constituent components, given that the RAB charge for these students stands at approximately 74%, maintenance loan write-offs cost the public purse £306m per nursing cohort, while tuition fee loan write-offs cost £378m. In addition, the provision of Teaching Grants to English HEIs (based on funding for high-cost subjects in Band C1.1) costs £14m per cohort.

The average debt on graduation per student in the cohort (including accumulated interest) was estimated to be £47,600, with average lifetime repayments of £24,400 for male graduates and £10,700 for female graduates.

We estimate that, under the current system, 100% of all nursing graduates never fully repay the entirety of their outstanding loan balance.

The Exchequer benefit generated by the cohort’s subsequent employment in the NHS (measured over the first 10 years post-graduation) – and the associated savings relative to the recruitment of Bank and Agency nursing staff – were estimated at £1,693m. This implies an Exchequer benefit-to-cost-ratio of 2.4 : 1.

Note: All monetary values have been discounted to net present values and are presented in constant 2021-22 prices. All monetary values per student have been rounded to the nearest £100, and all totals have been rounded to the nearest £1m.
Current funding system: Loan repayments

Total loan repayments by full-time first degree nursing students in the 2021-22 cohort (NPV in 2021-22 prices), by earnings decile and gender

- Reflecting differences in earnings (and employment probabilities), lifetime loan repayments are considerably larger for men than for women.

- While the average repayments made by male nursing graduates stand at £24,400, there is considerable variation across the earnings distribution. Repayments range from only £700 (1st decile) to £56,600 (9th decile).

- Female graduates in the bottom four earnings deciles are expected to make no/very small loan repayments over the current 30-year repayment period. However, repayments increase sharply thereafter. Female graduates on the 7th, 8th and 9th earnings deciles are expected to make repayments of £17,100, £26,600 and £40,700 respectively (with an average of £10,700 across all deciles).

Note: The analysis for nursing students is based on an average age at enrolment for full-time first degree nursing students in the 2021-22 cohort of 24 (see Annex), and an average study duration of 3 years. Values are presented in NPV terms in 2021-22 prices, and have been rounded to the nearest £100.
Current funding system: Loan repayments

Total loan repayments by full-time first degree students in the 2021-22 cohort (NPV in 2021-22 prices), by earnings decile and gender

- In addition to nursing graduates specifically, we also assessed the lifetime loan repayments for ‘average’ full-time first degree graduates in the 2021-22 cohort (irrespective of subject studied and subsequent occupation).
- Under the current funding system, the lifetime loan repayments of nursing graduates are significantly lower than for ‘average’ graduates – for all deciles - driven by their lower lifetime earnings. The repayments of nursing graduates were estimated £24,400 for male graduates and £10,700 for female graduates, with a RAB charge of 74%. This compares to an average across all full-time first degree graduates of £49,600 (men) and £19,400 (women), with a RAB charge of 31%.

Note: Values are presented in NPV terms in 2021-22 prices, and have been rounded to the nearest £100.
Current funding system: Loan repayment profiles

Lifetime loan repayment profiles (by age) for full-time first degree nursing students (cash terms (not discounted) in current prices)

Under the current funding system, all nursing graduates (i.e. on all deciles) are expected not to fully repay their loan by the end of the repayment period – i.e. these graduates make repayments over the entire 30-year repayment period, without ever repaying their outstanding loan balance.

Note: The dashed vertical line indicates the age at loan write-off (i.e. the age at which the end of the loan repayment period is reached). The analysis is based on an average age at enrolment for full-time first degree nursing students in the 2021-22 cohort of 24 (see Annex), and an average study duration of 3 years. All values here are presented in current prices (and are not discounted to net present values).
There are a several important general points to note about the higher education fees and funding system:

- **Positive real interest rates** appear to harm graduates. However, in reality, they are one of the few means available to retain the highest earning graduates in repayment for longer. Removing real interest rates benefits only the highest earning graduates.

- **Extending the repayment period** only affects individuals that have *not* repaid their full loan (i.e. low and middle-income graduates).

- **Reducing the repayment threshold** (both directly and through a change in the uprating mechanism) has ambiguous effects depending on earnings:
  - The highest earning graduates – who are already expected to repay their loan – repay earlier, resulting in lower total repayments.
  - Low and middle-income graduates are *not* expected to repay their full loan, and thus make higher repayments over the entirety of the repayment period.
Augar funding system
### Augar funding system: Totals

<table>
<thead>
<tr>
<th>Resource flows</th>
<th>Current system</th>
<th>Augar system</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exchequer costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of maintenance loans</td>
<td>£306m</td>
<td>£168m</td>
<td>(£138m)</td>
</tr>
<tr>
<td>Cost of tuition fee loans</td>
<td>£378m</td>
<td>£207m</td>
<td>(£170m)</td>
</tr>
<tr>
<td>Cost of Teaching Grants</td>
<td>£14m</td>
<td>£14m</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Exchequer cost</strong></td>
<td>£697m</td>
<td>£390m</td>
<td>(£308m)</td>
</tr>
<tr>
<td><strong>Exchequer benefits</strong></td>
<td>£1,693m</td>
<td>£1,693m</td>
<td>-</td>
</tr>
<tr>
<td>Benefit-to-cost ratio</td>
<td>2.4</td>
<td>4.3</td>
<td>1.9</td>
</tr>
<tr>
<td><strong># of students in cohort (starters)</strong></td>
<td>22,240</td>
<td>22,240</td>
<td>-</td>
</tr>
<tr>
<td><strong>Average debt on graduation</strong></td>
<td>£47,600</td>
<td>£46,200</td>
<td>(£1,400)</td>
</tr>
<tr>
<td>Average lifetime repayments (M/F)</td>
<td>£24,400/£10,700</td>
<td>£42,000/£26,000</td>
<td>£17,600/£15,300</td>
</tr>
<tr>
<td>RAB charge</td>
<td>74%</td>
<td>41%</td>
<td>-33pp</td>
</tr>
<tr>
<td>% never repaying full loan</td>
<td>100%</td>
<td>87%</td>
<td>-13pp</td>
</tr>
</tbody>
</table>

Note: All monetary values have been discounted to net present values and are presented in constant 2021-22 prices. All monetary values per student have been rounded to the nearest £100, and all totals have been rounded to the nearest £1m.

- Implementing all of the changes to student finance arrangements in response to Augar would **save the public purse £308m** per nursing cohort. This is equivalent to a **44%** decrease in the cost of funding per cohort. These savings are driven by lower loan write offs for both maintenance loans (£138m) and tuition fee loans (£170m).
- The RAB charge for nursing students would be expected to decline by **33 percentage points**, to an estimated **41%**. The proportion of graduates **not** making any loan repayments over the 40-year repayment period would decline to **87%**.
- The average debt on graduation declines as a result of the removal of real interest rates (by **£1,400**).
- Average lifetime repayments for **both male nursing and female nursing graduates** increase very significantly - to **£42,000** for men, and **£26,000** for women. There are very important **distributional effects** associated with these funding changes - and **nursing graduates are disproportionately negatively affected** (see next slides).
- The Exchequer benefit remains unchanged compared to the current system (**£1,693m**). However, given the decline in cost, the Exchequer benefit-to-cost-ratio would increase to **4.3 : 1**.
Augar funding system: Loan repayments

- Under the Augar system, the reduction in the repayment threshold (and slower uprating) and the extension of the repayment period increase the costs borne by low and middle-income graduates. They typically repay more, for longer.
- As a result, under the Augar system, almost all nursing graduates will experience a significant increase in their lifetime loan repayments. For men, average repayments are expected to increase by £17,600 (from £24,400 to £42,200); for women, the increase stands at £15,300 (from £10,700 to £26,000).

Note: Values are presented in NPV terms in 2021-22 prices, and have been rounded to the nearest £100.
Augar funding system: Loan repayments

The elimination of real interest rates essentially guillotines the repayments made by the highest earners, as they are able to pay off their loans more quickly. Therefore, high-earning graduates benefit significantly from the Augar proposals (see right-hand chart for ‘average’ FT first degree graduates).

Given the differential impacts on low/middle-income graduates vs. high-earning graduates, the changes under the Augar system are deeply regressive. Nursing graduates are disproportionately negatively affected by the proposals, as they are typically at the lower end of the overall graduate earnings distribution.

Note: Values are presented in NPV terms in 2021-22 prices, and have been rounded to the nearest £100.
The earnings of nursing graduates are typically at the lower end of the graduate earnings distribution.

Therefore, the change in the repayment threshold and repayment period under the Augar system will result in an increase in their lifetime loan repayments, as (most) nursing graduates are expected to make higher repayments per year, over a longer period.

Note: The dashed vertical lines indicate the age at loan write-off (i.e. the end of the repayment period; age 56 under the current system, and age 66 under the Augar system). The analysis is based on an average age at enrolment for full-time first degree nursing students in the 2021-22 cohort of 24 (see Annex), and an average study duration of 3 years. All values here are presented in current prices (and not discounted to NPV).
Augar funding system: Loan repayment profiles - Women

Lifetime loan repayment profiles (by age) for female full-time first degree nursing students (cash terms (not discounted) in current prices)

- The earnings of nursing graduates are typically at the lower end of the graduate earnings distribution.
- Therefore, the change in the repayment threshold and repayment period under the Augar system will result in an increase in their lifetime loan repayments, as (most) nursing graduates are expected to make higher repayments per year, over a longer period.

Note: The dashed vertical lines indicate the age at loan write-off (i.e. the end of the repayment period; age 56 under the current system, and age 66 under the Augar system). The analysis is based on an average age at enrolment for full-time first degree nursing students in the 2021-22 cohort of 24 (see Annex), and an average study duration of 3 years. All values here are presented in current prices (and not discounted to NPV).
Augar funding system with loan forgiveness
### Augar system with loan forgiveness: Totals

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<th>Augar + loan forgiveness</th>
<th>Difference</th>
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<td></td>
</tr>
<tr>
<td>Cost of maintenance loans</td>
<td>£168m</td>
<td>£238m</td>
<td>£71m</td>
</tr>
<tr>
<td>Cost of tuition fee loans</td>
<td>£207m</td>
<td>£295m</td>
<td>£87m</td>
</tr>
<tr>
<td>Cost of Teaching Grants</td>
<td>£14m</td>
<td>£14m</td>
<td>-</td>
</tr>
<tr>
<td>Total Exchequer cost</td>
<td>£390m</td>
<td>£547m</td>
<td>£158m</td>
</tr>
<tr>
<td>Exchequer benefits</td>
<td>£1,693m</td>
<td>£1,693m</td>
<td>-</td>
</tr>
<tr>
<td>Benefit-to-cost ratio</td>
<td>4.3</td>
<td>3.1</td>
<td>-1.2</td>
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<tr>
<td>Average lifetime repayments (M/F)</td>
<td>£42,000/£26,000</td>
<td>£29,500/£18,600 ((£12,500)/(£7,400))</td>
<td>-</td>
</tr>
<tr>
<td>RAB charge</td>
<td>41%</td>
<td>58%</td>
<td>17pp</td>
</tr>
<tr>
<td>% never repaying full loan</td>
<td>87%</td>
<td>94%</td>
<td>7pp</td>
</tr>
</tbody>
</table>

Note: All monetary values have been discounted to net present values and are presented in constant 2021-22 prices. All monetary values per student have been rounded to the nearest £100, and all totals have been rounded to the nearest £1m.

- The final scenario involves the introduction of loan forgiveness for nursing graduates, with an assumed 30% of the loan balance written off after 3 years in the NHS, 70% after 7 years, and 100% after 10 years.
- **Compared to the Augar system**, the introduction of loan forgiveness would increase the Exchequer cost of funding by **£158m** per cohort of nursing students. This is driven by higher write-offs (due to loan forgiveness) of both maintenance loans (**£71m**) and fee loans (**£87m**).
- Although the cost is higher than under the Augar system, this still represents a **£150m saving** compared to the cost of the current system (see Slide 5).
- Compared to the Augar system, the RAB charge for would increase by **17 percentage points**, to **58%**. This is driven by a decline in lifetime loan repayments, to an estimated average of **£29,500** for men, and **£18,600** for women.
- Again, the Exchequer benefit remains unchanged (at **£1,693m**). However, given the increase in cost compared to the Augar system, the Exchequer benefit-to-cost-ratio would decline to **3.1 : 1**.
Forgivable loans would result in different lifetime loan repayment profiles depending on whether (and for how long) graduates work in the NHS.

For nurses working in the NHS for less than 3 years (or not at all), the full loan balance would only be written off after 40 years (as under the Augar system), resulting in the largest loan repayments as compared to graduates working in the NHS.

Nurses working in the NHS for 10 years or more would have their entire loan balance written off 10 years post-graduation, resulting in the lowest loan repayments overall, and becoming debt-free relatively early in their careers. Nurses working in the NHS between 3-6 and 7-9 years would benefit from partial write-offs only, and thus make larger repayments, and for longer.

Note: All values here are presented in current prices (and are not discounted to net present values).
Note that, in this example for female nursing graduates on the 5th income decile, the early loan forgiveness would have no benefit for female graduates staying in the NHS for only 3-6 years.

This is because their annual repayments would be too low to ever repay the full balance, over the entire 40-year repayment period. As a result, the repayment profile for these graduates is the same as for graduates working in the NHS for less than 3 years (or not at all).

Note: All values here are presented in current prices (and are not discounted to net present values).
Augar system with loan forgiveness: Assumed increase in the student cohort

- The above results (in Slide 17) assumed that the loan forgiveness would have no impact on the number of students starting nursing courses. Here, we estimate the potential impact on the Exchequer cost/benefits if forgivable loans were to result in an increase in the size of the nursing student cohort.

- The forgivable loans would result in a 29% decline in the effective price of studying nursing\(^1\) (as more of the cost would be written off by the Exchequer). Assuming a price elasticity of \(-0.087\)^2, we estimate that this price reduction would result in a 2.5% increase in the number of students entering nursing programmes. Applied to the 2021-22 cohort of nursing students, this equates to an additional 560 students per cohort.

- Under these assumptions, compared to the Augar system, the Exchequer costs would increase by £171m per cohort (£14m more than under no change to the size of the cohort). At the same time, the Exchequer benefit would also increase, by £42m. The benefit-to-cost ratio would remain at 3.1 : 1 (same as under no change to the size of the cohort).

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1. The effective price of studying nursing, from the students’ perspective, was calculated as: [Gross fees – fee loan (% not repaid) – fee waivers] + [Cost of maintenance – maintenance loan (% not repaid) – living cost bursary].

Dr Gavan Conlon, Partner, London Economics  
gconlon@londecon.co.uk

Ms Maike Halterbeck, Divisional Director, London Economics  
mhalterbeck@londecon.co.uk

@LE_Education

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Assumptions and methodology
Assumptions and methodology

- The model considers the total number of full-time English domiciled first-year students undertaking first degrees in nursing at English higher education institutions in the 2021-22 academic year. We use information published by the Higher Education Statistics Agency (HESA, here) for 2020-21, assuming that the size and characteristics of the student cohort have remained unchanged between 2020-21 and 2021-22.
  - In terms of subject of study, the HESA data includes students enrolled in any nursing subject in 2022-21, and our analysis specifically focuses on students enrolled in Adult Nursing, Children’s Nursing, Learning Disabilities Nursing, and Mental Health Nursing subjects only.
  - In terms of location of study, the HESA data includes English domiciled studying anywhere in the UK, rather than in England only. Therefore, we estimated the number of students studying in England specifically, by multiplying the total number (23,200 students) by the proportion of total English domiciled full-time first degree students (in any subject) studying in England (96%) as compared to other parts of the UK (based on separate HESA data, here).
- Hence, the analysis assumes that there are 22,240 English domiciled students starting full-time first degrees in nursing subjects in England in 2020-21.
- The analysis is undertaken by gender - assuming that 91% of nursing graduates are female, and that 9% are male (based on UCAS end-of-cycle data on the number of English domiciled applicants accepted into nursing courses in England in 2021, by gender (here)).
- We assume an average age at enrolment of 24 (based on UCAS data provided by the Royal College of Nursing), and an average study duration of 3 years.
- To arrive at the cohort’s continuation/completion rates during study, again based on HESA data (here), we assume an annual continuation rate of 92.9%. This is based on the proportion of mature students (aged 22 or older at enrolment) who started full-time first degrees in subjects allied to medicine in 2019-20 and who were still enrolled in higher education one year after enrolling. The data includes UK domiciled students studying anywhere in the UK. We then assume that drop-out occurs at the end of each academic year; in other words, based on the assumed 3-year study duration, we assume that 100% of students in the cohort complete Year 1, 92.9% complete Year 2, and 86.3% complete Year 3.
The maximum (gross) tuition fee chargeable to English domiciled full-time students in 2021-22 is £9,250, with an estimated average fee charged of approximately £9,120 (rounded to the nearest £10, based on OFFA data, here). Despite the existence of Access Agreements and the provision of bursaries and fee waivers by HEIs¹, the net tuition fee remains the same in rounded terms (£9,120), as the majority of financial support is paid to students in the form of maintenance (i.e. non-fee) bursaries.

We assume that all students in the cohort cover these fees by taking out a tuition fee loan of the same amount (i.e. our model assumes maximum exposure of the student loan system).

Based on the 2021-22 funding system, we have modelled (full-time) students’ maintenance loan eligibility by students’ living conditions, separately for full-time students living at Home (LAH, 23% of students), living away from home outside of London (LAFHOL, 63% of students) and living away from home in London (LAFHIL, 14% of students)² - using the current household income thresholds applied by Student Finance England. To determine the size of maintenance loans received, students in the cohort are categorised by these assumed living arrangements whilst in study.

We assume that all students take out the maximum available loan to which they are entitled (i.e. again, maximum exposure of the loan system).

In terms of students’ household income, we base eligibility for maintenance loans on information from the Student Loans Company (SLC, here) on the distribution of students by household income, based on the proportion of students that were previously in receipt of full or partial maintenance grants (in 2015-16 which was the last year that maintenance grants were available, and so constitutes the last year for which this information is available).

We assume that fees, fee loans, and maintenance loans do not increase over the duration of students’ courses (i.e. we assume the same amount per student per year in every year of study).

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¹ Based on OFFA data (for 2018-19), approximately 13% of the tuition fee charged in excess of the Basic fee of £6,165 per annum is ‘handed back’ to students in the form of fee and maintenance bursaries. However, the overwhelming majority of these bursaries are maintenance related (approximately 97%). As such, the relatively minor tuition fee bursary has a negligible impact on the net tuition fee.

² The distribution of students across these different living conditions is based on information from the 2014-15 Student Income and Expenditure Survey for England (on the proportion of full-time students living at home vs. living away from home; here), combined with HESA data on the number of first-year English domiciled full-time undergraduate students living in London vs. elsewhere in the UK (here).
Assumptions and methodology

- Under the current (i.e. Baseline) funding system, tuition fee and maintenance loans accumulate interest at 3% + Retail Price Index (RPI) inflation during the period of study. After graduation, loans accumulate interest depending on earnings, with individuals who earn up to £27,295 incurring interest at 0% + RPI, increasing to 3% + RPI for individuals with earnings of £49,130 per annum or above (with both thresholds frozen until 2022-23 (inclusive), and uprated with nominal average earnings growth thereafter).

- Under the current system, we assume that loan repayment is 9% of earnings in excess of £27,295 per annum (again frozen until 2022-23 (inclusive), and uprated with nominal earnings growth thereafter), and that all loans are written off 30 years from the Statutory Repayment Due Date (SRDD).

- In the Augar system, based on the proposals outlined in the Department for Education’s response to the Augar Review (here):
  - The earnings threshold for loan repayment is reduced to £25,000, frozen until 2026-27 (inclusive), and uprated with RPI inflation thereafter (rather than average earnings growth) (see next slide for more information);
  - Real interest rates are removed both during study and post-graduation (i.e. loan interest equals RPI inflation for all graduates, irrespective of their earnings; as a result, the previous upper earnings threshold for real interest accumulation is no longer relevant); and
  - The loan repayment period is extended from 30 years to 40 years (i.e. by 10 years).

- In the Augar system with loan forgiveness, we assume the same changes to the loan repayment threshold, real interest rates, and loan repayment period as under the Augar system. In addition, we assume that, for graduates working in the NHS:
  - 30% of their outstanding loan balance is written off after 3 years in the NHS;
  - 70% of their outstanding loan balance is written off after 7 years in the NHS; and
  - 100% of their outstanding loan balance is written off after 10 years in the NHS.

We assume that loans for graduates not ever working in the NHS, or working in the NHS for less than 3 years, would only be fully written off 40 years after the SRDD (as in the Augar system).
Assumptions and methodology

Loan repayment and upper interest earnings thresholds, by year

Note: All values here are presented in current prices (and are not discounted to net present values). Under the Augar system, real interest rates are removed both during study and post-graduation (i.e. loan interest equals RPI inflation for all graduates, irrespective of their earnings). As a result, the upper earnings threshold for real interest accumulation is not relevant for this scenario (but has been presented here for completeness).
Assumptions and methodology

- In relation to teaching grants, the average teaching grant per student was derived by dividing the total high-cost subject funding for students in price Band C1.1 provided by the Office for Students in 2021-22 by the underlying number of funded full-time equivalent students in that price band in that year. The average teaching grant per nursing student in England is thus estimated to be £253 per student per annum.

- As with fees, fee loans, and maintenance loans, we assume that teaching grants do not increase over the duration of students’ courses (i.e. we assume the same amount per student per year in every year of study).

- To estimate the RAB charge, we assume a real discount rate of -1.1% as used in the Department of Education’s most recent RAB charge estimates, with a nominal discount rate of -1.1% + RPI. We use the following equation to calculate the RAB charge:

$$RAB\ \text{charge} = \frac{NPV\ \text{loan outlay} - NPV\ \text{repayments}}{NPV\ \text{loan outlay}}$$

- In other words, the RAB charge associated with the 2021-22 cohort is calculated based on the NPV of the aggregate loan outlay provided to these students over the course of their studies (i.e. in total throughout all years of study), as well as the NPV of the total estimated loan repayments expected to be made by these students after they graduate.
Assumptions and methodology

- To estimate nursing graduates’ lifetime loan repayments (by gender and earnings decile), we make use of pooled UK Quarterly Labour Force Survey data for the period 2010Q1 to 2021Q4.

- Using this data, we estimate the average earnings (in June 2021 prices) among individuals in possession of first degrees in nursing subjects and whose occupation is defined as nursing professionals (defined using SOC2020 code 223). Average earnings were estimated separately by gender, earnings decile, and age band (from which we subsequently generated ‘smoothed’ age-earnings profiles).

- We also estimate the average probability of being in employment among individuals in possession of first degrees in a nursing subject, by age band and gender.

- Combining earnings and employment, we then estimate the employment-adjusted annual earnings profiles of nursing graduates, by gender and earnings decile. We adjust these age-earnings profiles to account for the fact that earnings are expected to increase over time (again using Office for Budget Responsibility forecasts of average nominal earnings growth per year (here and here)).

1. This includes all individuals in possession of first degrees in nursing, irrespective of whether that qualification was their highest educational attainment or not.

2. For employment probabilities, by definition, it was not possible to limit the analysis to individuals whose occupation is classified as nursing professionals (since an occupation classification is only assigned to individuals who are in employment).
Assumptions and methodology

- **Uptake rate into a NHS post**: Based on an analysis of the Labour Force Survey, the Royal College of Nursing’s *UK Nursing Labour Market Review 2020* (here) indicates that, in 2020, approximately 78.1% of employed nurses and midwives in the UK were employed in a health authority or NHS trust. It should be noted that this figure includes newly qualified NHS staff, as well as existing retained staff.

- **Turnover rate associated with nursing staff working for the NHS**: Over the period from December 2020 to December 2021, NHS Digital Workforce Statistics (here) indicate that 36,689 nurses and health visitors left the NHS system in England. With an average of 347,053 substantive NHS staff (nurses and health visitors) in England per month over the period, this corresponds to a turnover rate of 10.6%.

**NHS staff costs:**

- It is assumed that a newly qualified nurse’s basic salary (excluding the High Cost Area Supplement (HCAS)) begins at the bottom of Band 5 (i.e. the 'entry step', <2 years experience) on the Agenda for Change annual pay scales (2021-22). This is equal to an annual salary of £25,655. Based on the progression of the pay scales, we assume that this salary applies to Years 1-2 post-graduation, then moving to the 'intermediate step point' (£27,780, 2-4 years experience) in Years 3-4, and then to the ‘top step point’ (£31,534, 4+ years experience) of Band 5.

- We then adjust these salary rates for the High Cost Area Supplement for nurses in London, for assumed on-costs of 25%, and for UK average nominal earnings growth forecasts1. The total cost of a newly qualified nurse is thus assumed to be equal to £36,712 per year in 2024-25 (i.e. in the first year post-graduation of the 2021-22 nursing cohort), increasing to £61,845 per year by 2033-34 (i.e. 10 years post-graduation).

- **Use of Agency and Bank staff**: According to the NHS Interim People Plan 2019 (here), Agency and Bank staff currently fill approximately 80% of nursing post vacancies in the NHS. Using NHS Improvements data provided by Health Education England (for 2015-16), we assume that the split between the use of Agency and Bank staff for a vacancy is 50.7% and 49.3%, respectively.

**Cost of Agency and Bank staff:**

- In the 2016 National Audit Office report, *Managing the supply of NHS clinical staff in England* (here), it was reported that the hourly cost of Agency and Bank staff was £39 and £27 (respectively, in 2015).

- An annual cost is estimated assuming a 37.5 working week and 236 working days in a year (365 minus 35 days of entitled annual leave (including Bank Holidays) adjusted for a 5-day working week). This provides annual earnings of £68,946 for Agency staff and £47,732 for Bank staff in 2015. Adjusting for nominal earnings growth2, these figures are estimated to be £88,041 for Agency and £60,952 per year for Bank staff in 2024-25.

- It is assumed that the annual costs of Agency and Bank staff increase at the same growth rate (nominal earnings growth plus progression across spine points) as the costs of NHS staff. Therefore, by 2033-34, the annual cost of Agency staff is estimated to be £148,313 and £102,679 per year for Bank staff.

**Net benefit of one additional newly qualified nurse:**

- The net benefit of one additional newly qualified nurse is calculated as the difference between the total cost of a newly qualified nurse working for the NHS and the total weighted average cost of using Agency and Bank staff (adjusting for usage and split). Using 2024-25 figures, the net saving is equal to £23,040 ([80% x ((50.7% x £88,041)+ (49.3% x £60,952)) - £36,712] - increasing to £38,813 per additional newly qualified nurse in 2033-34.

1. Again, we use Office for Budget Responsibility forecasts of average nominal earnings growth per year (here and here). Note that, based on historical data, it is likely that earnings growth for nurses on the Agenda for Change will be lower than overall UK-wide average earnings growth; this implies that the results here are likely to constitute an underestimate of the Exchequer benefits associated with a cohort of nursing students.

2. Specifically, we adjust for the % change in mean annual basic pay per FTE for nurses & health visitors in NHS Trusts and CCGs in England between December 2015 and December 2021 (based on NHS Staff Annual Earnings data (here)). To arrive at 2024 values, we then again apply Office for Budget Responsibility forecasts of average nominal earnings growth per year (between 2021 and 2024).