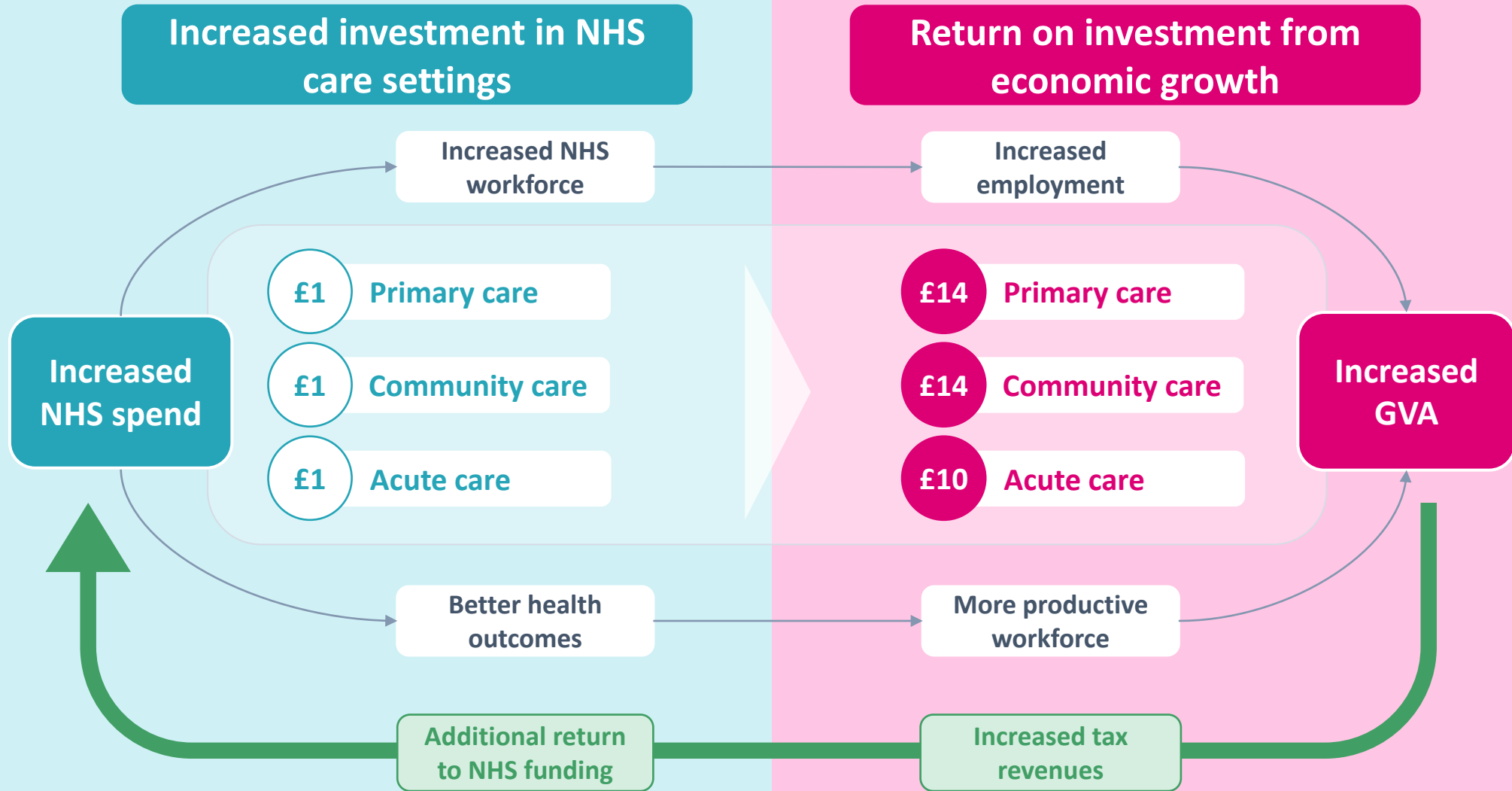


# The influence of NHS spending on economic growth

August 2023

Increased investment in NHS primary, community and acute care is associated with greater economic growth, effectively paying for itself through increased tax receipts



# Summary

- Our previous research has shown that **every £1 spent on the NHS had an approximate corresponding economic benefit of £4**: In October 2022, CF and NHS Confederation [published research](#) which examined the return on investment of NHS spending on economic growth and found that there was a 4x multiplier on all NHS spending for economic growth, meaning that health spend should be seen as investment to drive economic growth
- Building on this work, we have sought to answer the question: **how does this return on investment vary by care setting?**
  - We developed a multi-year longitudinal dataset on spend, needs and activity as well as economic growth at the smallest possible unit of granularity, weighting spend to the appropriate needs-weighted populations calculated by NHSE England to compare diverse areas. We analysed the growth in this investment by setting of care over a 5 year time-period
  - We found that areas which increased their spend in **community and primary care** experienced statistically significant **increases in economic activity, equivalent to £14 in growth for every £1 spent** - there was also a statistically significant **benefit of £10 for those areas which increased acute spend** by the most but, notably, we did not find a statistically significant relationship for mental health spend, an issue we attribute to the poor quality of mental health data
- There are **two potential mechanisms** through which NHS spend can increase local GVA
  - Mechanism 1:** Improved health outcomes through enhanced and improved capacity enables **a more productive workforce by reducing sickness due to ill health and improved health outcomes**
    - Through our previous work we have found evidence to support the impact of primary and community care spending on health outcomes:
      - Primary care spending is linked to occupied bed days (OBDs) and A&E attendances, **meaning that improved access to primary care can prevent the need for secondary care**
      - There is a link between community care spending per capita on people over 65 **whereby access to community care can lower the need for acute care**
  - Mechanism 2:** Increased NHS workforce has a direct benefit on the local economy through a boost to employment, spending and tax revenues - those newly employed by the NHS pay tax, and stimulate the local economy through consumption
- **On the assumption that the tax burden and distribution of public spending remain similar to today, we estimate that the size of the impact in the areas which increased spend by the least is such that it would pay for itself in community, primary and acute care**

In understanding these findings it is important to recognise the following:

- Variation in spend is locally determined: There is a high degree of variation in spend per weighted population by area - this variation is locally determined as, although there is a national formula for weighting, **substantial local discretion exists in each care setting**
- We have assumed a **one-year time lag** before the impact of economic growth starts materialising because both mechanisms stand to have relatively swift effects:
  - New jobs that are created in the NHS will be reflected as additional economic activity to a certain extent
  - Our previous work on interventions to support public health management revealed a 1-3 year timeframe for these to translate into improved outcomes

# We have analysed how changes in spend relate to economic growth

We have examined how changes in spend by sector for historic CCGs are related to growth in Gross Value Added (GVA). We **compared the change in GVA between 2015 and 2019** for those areas which, between 2014/15 and 2018/19, increased their spend by the most and those which increased spend by the least for each of our four subject settings of care.



We have calculated spending by sector using **historic CCG spending data**, between 2014/15 and 2018/19. This data was **adjusted for inflation**, and hereon is presented in 2022 real terms. We have used CCG spend data as more granular local data is unavailable.



**Different areas** have **different populations** with **different needs**. This can make comparison difficult. In order to compare diverse areas, we have **weighted spend to the appropriate needs-weighted populations** calculated by NHS England. As such, spending figures are phrased as ‘spend per needs-weighted head’. It must be noted that it is possible for spending to be higher or lower than needs due to a) historical pattern, b) deliberate investment choices.



In order to compare changes in spend with economic growth, we have used **Gross Value Added (GVA) at a CCG level**, a measure of the total economic value generated in an area, released by the Office of National Statistics. We have assessed GVA in the second calendar year of each financial year, to allow for a **lag in the effect of spend on economic outcomes**.

# Data sources used

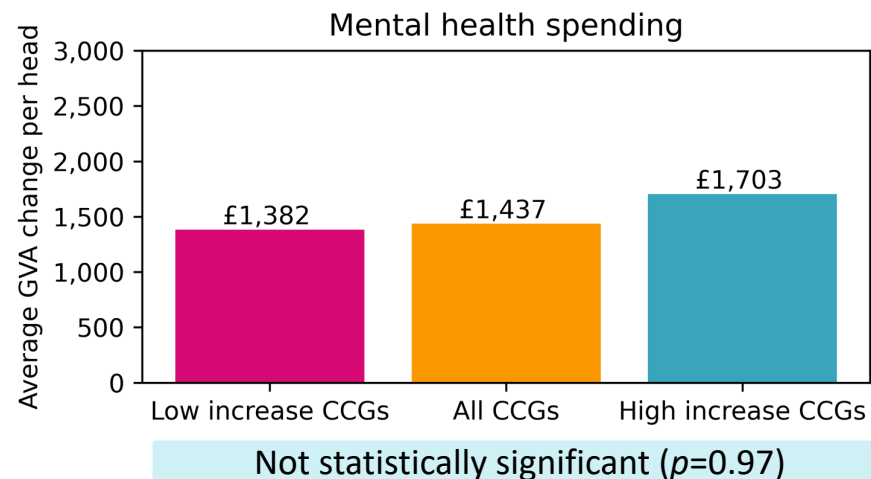
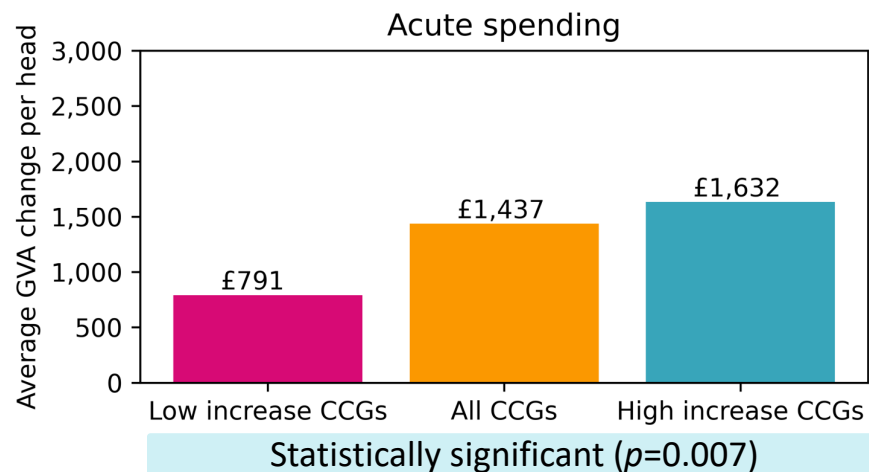
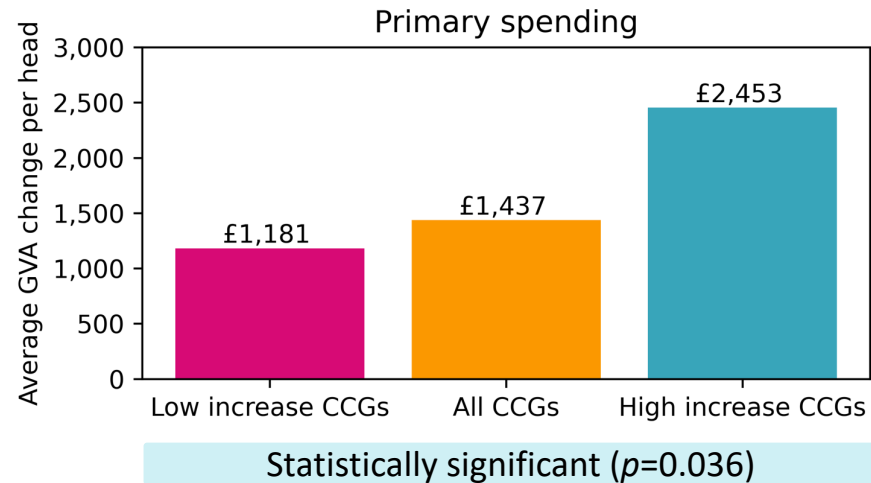
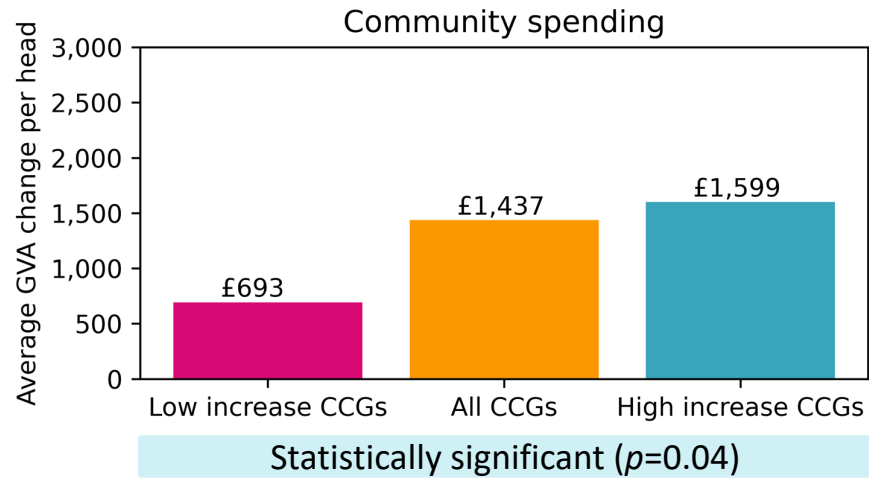
As part of our [continued investment in data](#), we have developed and curated a comprehensive economy dataset which allows for analysis of NHS interventions and their effect on the local economy. [We believe this dataset and accompanying analysis to be unique.](#)

Dataset	Source	Granularity used	Calculations and assumptions
<b>CCG needs index</b>	NHS England	<ul style="list-style-type: none"> <li>Financial Year</li> <li>Setting (general &amp; acute, mental health, community, overall)</li> </ul>	<ul style="list-style-type: none"> <li>Average needs index for CCGs that merged prior to 2021</li> </ul>
<b>CCG spending, 2014/15 - 2019/20</b>	NHS England, freedom of information request	<ul style="list-style-type: none"> <li>Financial year</li> <li>Setting (acute, primary care, community and mental health)</li> </ul>	<ul style="list-style-type: none"> <li>Excluded five CCGs whose funding reportedly changed dramatically between years, suggesting data quality issues</li> <li>Presented in 2022 real terms</li> </ul>
<b>Mid-year population estimates</b>	Office for National Statistics	<ul style="list-style-type: none"> <li>2015, 2019 &amp; 2021</li> <li>Lower super output area</li> </ul>	<ul style="list-style-type: none"> <li>Aggregated to 2021 CCG level</li> </ul>
<b>Gross Value Added (GVA)</b>	Office for National Statistics	<ul style="list-style-type: none"> <li>LSOA level</li> <li>2015 &amp; 2019</li> </ul>	<ul style="list-style-type: none"> <li>Aggregated to 2021 CCG level</li> <li>Presented in 2022 real terms</li> </ul>
<b>Inflation statistics</b>	Office for National Statistics		
<b>Data quality maturity index</b>	NHS Digital	<ul style="list-style-type: none"> <li>Setting of care, nationally</li> </ul>	

# We found that higher increases in spending were associated with higher economic growth

We compared GVA growth between 2015 and 2019 for CCGs which increased spending by the most and by the least, between 2014/15 and 2018/19.

## Mean increase in GVA per head for top and bottom quartiles of spending increase



- We found that areas which increased spend by the most between 2014/15 and 2018/19 for community, primary and acute care experienced statistically significant additional growth in GVA, relative to those which increased spend by the least.
- These increases were largest for community and primary care, where areas which increased spend by the most experienced additional GVA growth of more than £900 per head.
- We did not observe a statistically significant difference in GVA growth for mental health.

# Areas that increased spend the most also increased gross value added (GVA) by more

Setting of care	Community	Primary care	Acute
Possible additional GVA growth (ICS level)	£1.2bn*	£1.7bn*	£1.1bn*
GVA growth per extra £1 spent	£14.68	£14.14	£10.77
National GVA benefit of additional £1bn spend	£14.68bn	£14.14bn	£10.77bn

× £1bn

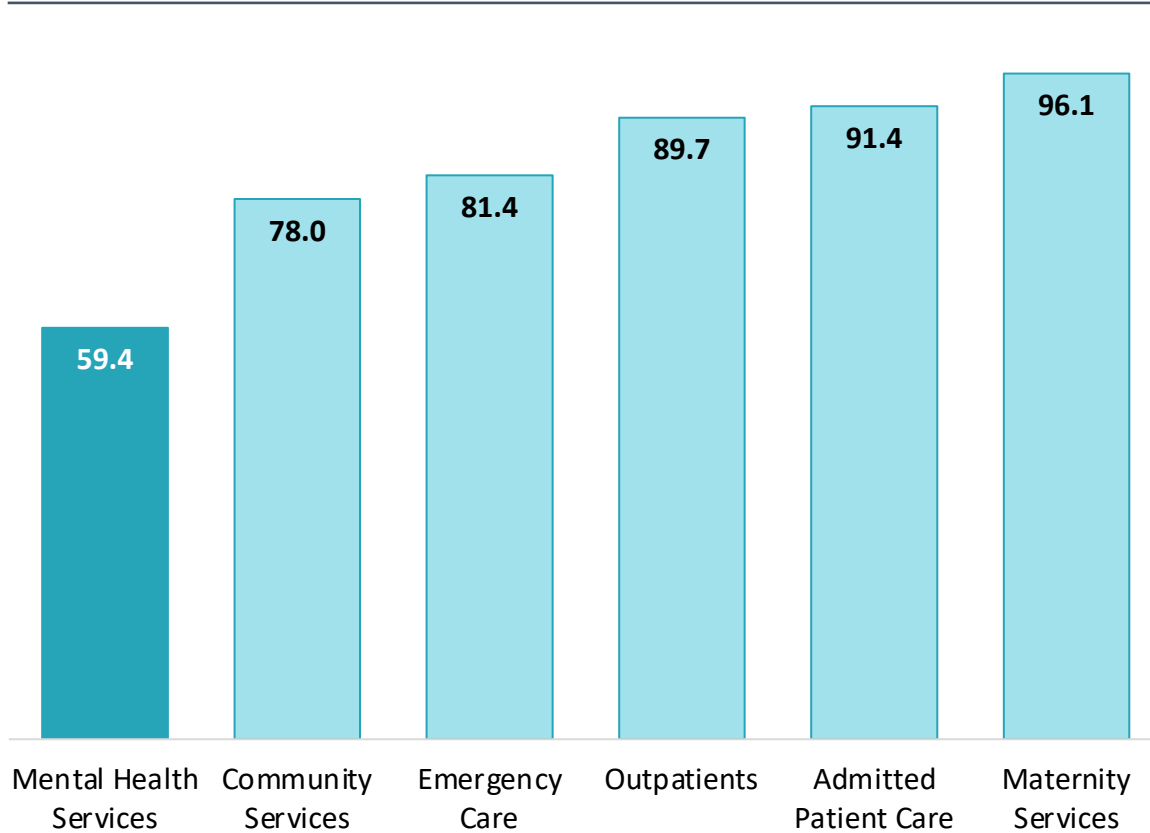
Note: in 2019, average ICS GVA was approximately £46bn  
 \*Statistically significant at 5% level, Wilcoxon rank sum test.  
 Note that we have excluded the uplift in growth for mental health spend, as this is not statistically significant.

Our analysis shows that there were **statistically significant differences in GVA growth between 2015 and 2019** for groups which increased spend by the most and those which increased spend by the least, for acute, community and primary care, but not for mental health.

- On average, those areas which increased spend by the least for each setting of care **could have increased GVA by an average of at least £446m on top of the growth experienced**, if all else were equal.
- This effect is **largest in community and primary care**, where increasing spend by as much as the areas which increased spend by the most could have increased GVA growth by **almost £450m and £700m**, respectively, for those which increased spend by the least. We find possible **benefits of more than £14 for every additional £1 required**, if spend remained stable elsewhere.
- We have calculated the benefit of investing **an additional £1bn (less than 1% of the national budget)** to those areas which increased spend by the least. This benefit is **more than £14bn to the national economy** if the investment was in community or primary care.
- This GVA multiplier of between £10 and £14 differs from the £4 benefit previously discovered as in this work we **focused on the change in spend in a subset of CCGs and specific settings of care**, as opposed to total NHS spend and its benefit to the entire economy.

# We did not find a statistically significant relationship between mental health spend and GVA; we suspect this is due to the poor quality of mental health data

Data Quality Maturity Index score by dataset, national average, December 2022



Setting of care	Community	Primary care	Acute	Mental health
Probability of not seeing difference due to chance alone	0.96	0.964	0.993	0.03

We did not find a statistically significant difference in GVA growth for high-increase areas for mental health.

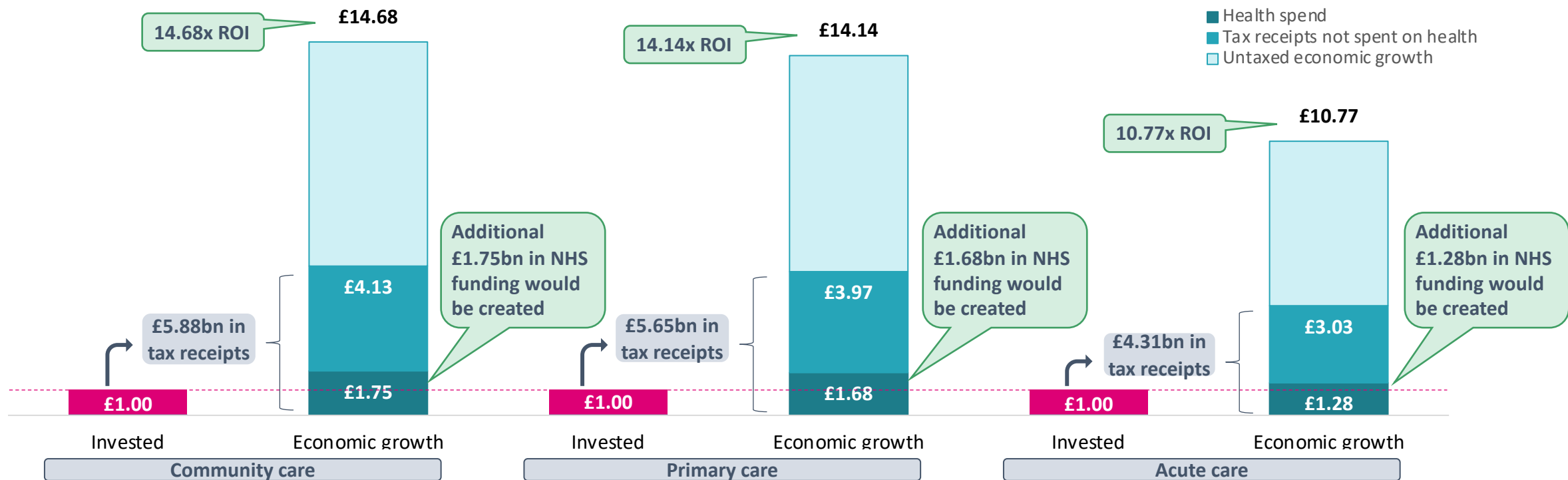
- We hypothesise that this is, in part, **due to poor data quality** underlying the mental health needs index used to weight spend.
- Mental Health Services has the **lowest Data Quality Maturity Index score of any dataset**, almost **20 points lower than Community Services** and **at least 22 points lower than the acute datasets**.
- We expect this poor data quality to **impact the calculations of the mental health needs index and make spending decisions harder**.



# We estimate that an additional £1bn investment in the areas which increased spend by the least would pay for itself in community, primary and acute care

- We estimate that an additional £1bn investment in community, primary or acute care, targeted in areas which increased spend by the least, could have led to additional economic growth of more than £10bn in each setting of care. This return on investment is greatest in community and primary care, indicating that investing in out-of-hospital care has the greatest economic benefits
- Given tax revenues are equal to approximately 40% of the national economy, we estimate that this investment would have paid for itself in increased tax revenue
- Indeed, given that NHS spending is equivalent to around 12% of GDP, this investment would have paid for itself in terms of increased NHS budget. An investment in any of the areas would have led to an increase in the budget of at least £1.28bn, a return on investment of almost 30%

Estimated missed national economic benefit and share taken as tax, billions



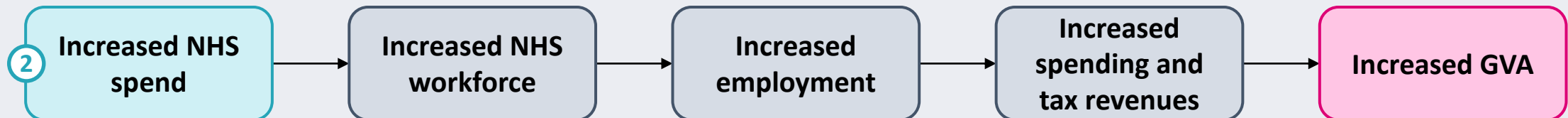
# We propose two potential mechanisms through which NHS spend increases local GVA

We hypothesise that there are two potential mechanisms through which NHS spend increases local GVA.

- Spend can improve health outcomes, enabling a **more productive workforce**



- Increased NHS workforce has a direct benefit on the local economy through a **boost to employment, spending and tax revenues**



# NHS leaders must understand the impact their spending decisions have on growth

The ability to increase spending that has been observed is largely the result of national allocations policy and national tariffs for hospitals, combined with local decision making. The most significant areas for influencing economic growth – community and primary care – are those which are in principle subject to significant local determination, even though within an often complex system. Given the ability of local and national organisations to influence economic outcomes through NHS spending, understanding the impact the NHS can have locally and nationally in driving economic growth is critically important.

	National direction	Local control
Community	Needs are calculated nationally by the allocation formula but there is no national contract for community services	Spending is almost entirely at the discretion of local leaders
Primary care	The bulk of funding is set by national contracts, though this varies by area according to whether local enhanced services taken on	The proportion of primary care funding is allocated locally
Acute	Payment by Results, which was suspended before being reinstated, powerfully drives the funding allocation for acute care	Local control over acute spending is more limited than in other care settings
Mental health	Along with nationally calculated needs, there is guidance on mental health allocations (e.g., Mental Health Investment Standard)	Allocation decisions are largely made by local leaders, within national guidelines

# Why we think interventions in primary and community care matter

- Community and primary care services have the benefit of reducing the burden on hospital services through reduced A&E attendances, and admissions, faster discharge and shorter length of stay
- A strategic investment in these areas can therefore mean optimised healthcare delivery ensuring better health outcomes in general through better care offered at the right place and the right time

	What services are offered?	What does this provide?	Why does it matter?
Community care	<ul style="list-style-type: none"><li>• A wide range of services that do not fall under primary nor hospital care</li><li>• Focus on older people and helping them stay independent</li><li>• Services are in large part home-based (nursing, health visits, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Rapid response closer to home</li><li>• Support for people to be independent</li><li>• Access to services that people would otherwise need hospital for</li></ul>	<ul style="list-style-type: none"><li>• Enables confidence in discharge</li><li>• Reduces length of stay in hospital</li><li>• Reduces readmission rate</li></ul>
Primary care	<ul style="list-style-type: none"><li>• First point of contact in the healthcare system</li><li>• Primarily general practice services but also includes community pharmacy, dental, and optometry services</li></ul>	<ul style="list-style-type: none"><li>• Case management</li><li>• Urgent response outside of hospital</li><li>• Management of long-term conditions</li></ul>	<ul style="list-style-type: none"><li>• Reduces A&amp;E attendances</li><li>• Reduces need for admissions</li><li>• There is proportion of primary care funding that is allocated locally</li></ul>

# Our previous work shows that increasing the primary care workforce can also create savings by reducing the need for secondary care

There is evidence that increasing the number of GPs per head leads to a decrease in the number of A&E attendances and long-stay non-elective inpatient spells. We can estimate the impact of adding one GP for 10,000 people

Modelling method	Estimated impact due to an increase in 1 GP per 10,000 people relative to need
A&E attendances per 10,000 people	-98
Long-stay non-elective inpatient spells (2 days or more) per 10,000 people	-10

- The salary cost of employing an extra GP ranges between **£65,070** to **£98,194**
- With an average A&E attendance cost of **£297**, average non-elective (long-stay) inpatient spells cost of **£4,842**, the above estimates would reduce costs by **£82,071** through the reduction of non-elective activity alone
- Reducing the number of A&E attendances and inpatient spells is directly linked to an improvement in the population's health, meaning that the monetary impact is likely to be significantly greater than the direct saving shown

# We believe that the two mechanisms identified will lead to quick effects of health spending, justifying a lag of only one year in examining economic effects

We have analysed economic growth with a one-year lag allowed after spend data. Given data constraints and existing evidence, we believe this is a reasonable method.

①

Our first mechanism supposes that an increase in NHS spend improves health. By treating patients earlier in the pathway with increased primary and community care capacity, patients become less acutely unwell, and avoid time in hospital. By improving health and avoiding time in hospital, local residents become more productive, leading to economic growth.

②

Our second hypothesis is that increased NHS spend will lead to a larger workforce, leading to increased local employment through well-documented multiplier effects in government spending. This would then lead to increased consumer spending and a boost to local businesses and employment.

We expect both mechanisms to work almost immediately, with benefits visible within one to three years. Given our earliest spend data is dated 2014/15 and that we wanted to understand the impact of a five-year change in spend, whilst avoiding the effect of Covid-19, it was impossible to examine a lag of more than one year.

This would merit further enquiry once we are further along the event horizon of the Covid-19 pandemic, the effect of which makes economic analysis of health data fraught.

In line with the above rationale, findings from our previous work on interventions to support public health management in North West London revealed a 1-3 year timeframe for these to translate into improved outcomes (e.g., average change in NEL admissions)

# Implications and way forward

## Implications

- The ability to increase level of spending per capita by setting of care is critically important to the contribution of the NHS
- The ability to make decisions about this is governed by complex national and local decision making
- It appears that prevailing notions of the importance of a cap in health spending at a level of low percentage of GDP may not be sensible

## Further questions/limitations

- Not taken into account diminishing returns and when they are accrued
- Not taken into account time value – the return was over 5 years – at minimum need to discount the value
- Not considered the hypothesis around debt cost – deflate in time value of money
- Not considered private healthcare spend
- Not considered confounding variables or intermediary steps that may be causing increased GVA
- Not considered investment increase against Indices of Multiple Deprivation (IMD)
- Not considered investment in social care

# About the authors



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