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RESEARCH

Analysis of Flying Start outcomes using linked data: childcare analysis

Initial research findings produced by analysing childcare data from the Flying Start programme linked with other health and education data.

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This evidence brief explores the potential relationship between Flying Start childcare and children's outcomes. The project linked Flying Start programme childcare data for Swansea with routine education and health records.

Main points

Flying Start is available to children under the age of four living in disadvantaged areas, with the aim of improving their life chances. It is made up of four core elements, including: childcare; enhanced health visiting; parenting support; and speech, language and communication support.

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Flying Start health visitor and childcare data was linked to routine data for educational attendance at primary school for 2017/18, as well as A&E attendance and hospital admissions data for children under the age of five for 2013-14 onwards. This analysis specifically looks at the amount of agreed childcare ('take up') and the number of sessions attended by each child. Findings relate only to the pilot area of the City and County of Swansea Council, and no statistical testing has been carried out to confirm significance of relationships implied, so these results cannot be generalised. Further analysis combining data for additional local authorities, and including statistical testing will be published in the future.

Education and health outcomes were identified for children living in the Swansea area who had received Flying Start Childcare from 2012-13 onwards. This was broken down into subgroups based on the amount of childcare agreed to (their 'take up') and the percentage of sessions that they attended. The aims of this are to: explore the potential of linking childcare data to potential outcomes; consider the possibility of identifying the amounts (or 'dosage') of Flying Start childcare received; and to begin to identify potential relationships between dosage of Flying Start and children's outcomes.

This analysis suggests:

- Data relating to levels of interaction with the Flying Start programme can be linked in order to evaluate education and health outcomes.
- Half of children were signed up to 156 or more childcare sessions (which is equivalent to four sessions per week over three terms or around five sessions per week over two terms).
- A quarter of children actually attended 156 or more sessions overall.
- On average, children in Flying Start childcare attended 78% of the sessions they had been signed up for. Children with 100% attendance in childcare tended to have accepted reduced offers of less than 80 sessions. In other words, those with full attendance tended to have agreed to a smaller amount of childcare in the first place.
- It is possible that higher levels of Flying Start childcare attendance may be associated with lower levels of A&E attendance, hospital admissions and primary school absences, compared with lower levels of Flying Start childcare attendance. These relationships will need to be investigated further

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to understand any potential effect of Flying Start on education and health outcomes.

These findings do not explore margins of error in detail. More in depth analysis will be published in future.

1. Introduction

ADR Wales, which is a new innovative partnership, has produced this evidence brief. ADR Wales brings together data science experts from government and academia to use the SAIL Databank.

The Flying Start Programme has been running since 2006-07 and is available to children under the age of four living in disadvantaged areas, with the aim of improving their life chances. It is made up of four core elements:

- Funded part-time high quality childcare for 2-year-olds;
- Enhanced health visiting service;
- Access to parenting support; and
- Access to speech, language and communication support.

This evidence brief uses the data produced by the Flying Start Individual level Data Collection Pilot project. The aim of the project is to establish an agreed, consistent set of data items for local authorities to collect about every Flying Start child. This data will be able to be linked with other data sets for evaluation purposes to consider the impacts of the programme. In August 2019 an evidence brief (**'Analysis of Flying Start Outcomes using linked data: emerging findings'**), referred to below as 'Emerging Findings report') was published which contained initial findings of this research project. The evidence brief began to consider the potential relationships between education and health services by looking at those children in Swansea who had a Flying Start health visitor and those who had not.

This evidence brief extends the initial analysis of Flying Start services using a data linking approach by focussing on the potential relationships between the childcare element and outcomes for children. It specifically looks at the amount

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of agreed childcare ('take up') and the number of sessions attended by each child. The aim of this is to develop a method to categorise 'higher' and 'lower' levels of childcare based on how Flying Start is delivered in one authority.

Flying Start aims to improve health and education outcomes for children by reducing the impact of deprivation. This note provides initial exploratory analysis of potential relationships based on levels of interaction with Flying Start childcare. Due to the exploratory nature of this evidence brief, it should not be read as an evaluation of the impact of any aspect of Flying Start. Instead, it should be seen as a demonstration that it is possible to undertake this kind of analysis, which is an important methodological development, which will be built on in future work.

2. Methods

Anonymised data from Flying Start childcare settings in Swansea was linked to the following datasets:

- National Pupil Dataset (NPD) and Pupil Level Annual School Census (PLASC) for attendance records
- Emergency Department Dataset Wales (EDDS) around Accident and Emergency (A&E) attendances
- Patient Episode Dataset for Wales (PEDW) around hospital admissions
- Welsh Demographics Service (WDS).

The analysis looks at education and health outcomes for children who received childcare in a Flying Start setting from 2012-13 onwards.

Statistics were produced which summarised a range of outcomes by group and subgroup. This analysis uses the most recent data available but the range of time periods for which data are available vary between datasets. Education outcomes were compared for academic years 2016/17 to 2017/18 and health outcomes were compared for financial years 2013-14 to 2016-17.

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3. Defining the Flying Start childcare subgroup

The core Flying Start childcare offer is that part-time high quality childcare is offered to parents of all eligible two-year-olds. Overall, children whose parents have accepted a 'full' offer of Flying Start childcare may attend 195 sessions, which would usually be made up of 2½ hours a day, 5 days a week for 39 weeks of the year. Parents can choose to 'take up' either the full offer or a reduced offer, if only some of the sessions are needed. An additional 15 sessions may also be made available throughout the year during school holidays, and in some special circumstances further sessions may be made available to children who have been identified as needing further support to help them get ready to start school

The data available for this analysis relates to children who started childcare in a Flying Start setting in Swansea between December 2012 and March 2019 inclusive (born between November 2010 and March 2017). This was 2,793 children overall. It should be noted that data held by the City and County of Swansea Council relating to children in childcare settings before these dates were not available for analysis.

There were around 2,500 children born over the same period who were registered for Flying Start (i.e. their records appeared in the Flying Start Health Visitor Caseload dataset also provided by City and County of Swansea Council) but did not receive any Flying Start childcare. This group includes those who chose not to take up childcare due to alternative childcare arrangements (e.g. private day nurseries) as well as those no longer eligible for childcare due to moving out of a Flying Start area before reaching the age of eligibility. It was not possible to define these children as an effective comparison group for this release due to a number of reasons. For example, it was not possible to identify which alternative childcare arrangements they may have accessed, or how effective these may have been. Also, it is challenging to identify whether children who briefly appeared on health visitor caseloads but had no health visitor interaction were indeed eligible for Flying Start, or how much they engaged with the other elements of the Flying Start programme. This may be explored further in future publications.

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In order to analyse education and health outcomes for childcare, the group of children who received Flying Start Childcare was broken down into subgroups based on the amount of childcare received.

As indicated above, parents of Flying Start children aged two may take up to as many as five sessions a week, every week for three terms a year, however some parents may take up fewer sessions per week, or fewer than three terms. For the purposes of this analysis we have identified children whose parents agreed to 156+ sessions (which equates to an average of four or more sessions per week over three terms, or five sessions per week for two terms) as 'higher take up' of childcare. Children whose parents agreed to less than 156 sessions are identified as 'lower take up' of childcare.

The amount of childcare a child receives is determined not just by the number of sessions taken up, but also a child's attendance pattern. A key policy aim for City and County of Swansea Council is for children to attend 80 percent of the sessions available to them. As such, children were split into two further groups, those who attended 80% or more of sessions they signed up to were identified as 'higher attendance'. Those who attended less than 80% of the sessions they signed up for were identified as 'lower attendance'

Based on this information children may fall into any one of four subgroups:

- Higher take-up, higher attendance; children whose parents agreed to 156 or more sessions with attendance of 80% or more
- Higher take-up, lower attendance; children whose parents agreed to 156 or more sessions with attendance of less than 80%
- Lower take-up, higher attendance; children whose parents agreed to less than 156 sessions with attendance of 80% or more
- Lower take-up, lower attendance; children whose parents agreed to less than 156 sessions with attendance of less than 80%

Using these categories the numbers of children receiving childcare in a Flying Start setting can be grouped into subgroups. The numbers in each subgroup are shown in Table 1.

Table 1: Numbers of children by number of sessions agreed with parents and percentage attendance

	Percentage attendance (%)	Percentage attendance (%)	Total
	Higher attendance ≥80	Lower attendance <80	
Sessions agreed Higher take-up ≥156	847	557	1,404
Sessions agreed Lower take-up <156	707	682	1,389
Total	1,554	1,239	2,793

The analysis presented below compares these four subgroups of children receiving childcare in a Flying Start setting in Swansea. More detailed analysis of the impact of the overall amount of childcare will be explored in future reports, using statistical testing to assess the significance of relationships which may be identified.

4. Findings

Children in Flying Start childcare settings in Swansea

The results below relate to any children who started childcare in a Flying Start setting in Swansea between December 2012 and March 2019 inclusive.

Figure 1 shows that half of children took up 156 or more childcare sessions. However, Figure 2 demonstrates that only a quarter of children actually attended at least 156 sessions.

The average number of sessions parents agreed to take up was 135 per child. The average number of sessions attended by children was 108 which equates to 78% of average take up. Children with 100% attendance in childcare tended to have accepted reduced offers of less than 80 sessions.

Figure 1: Children in Flying Start childcare settings by agreed number of sessions, December 2012 to March 2019

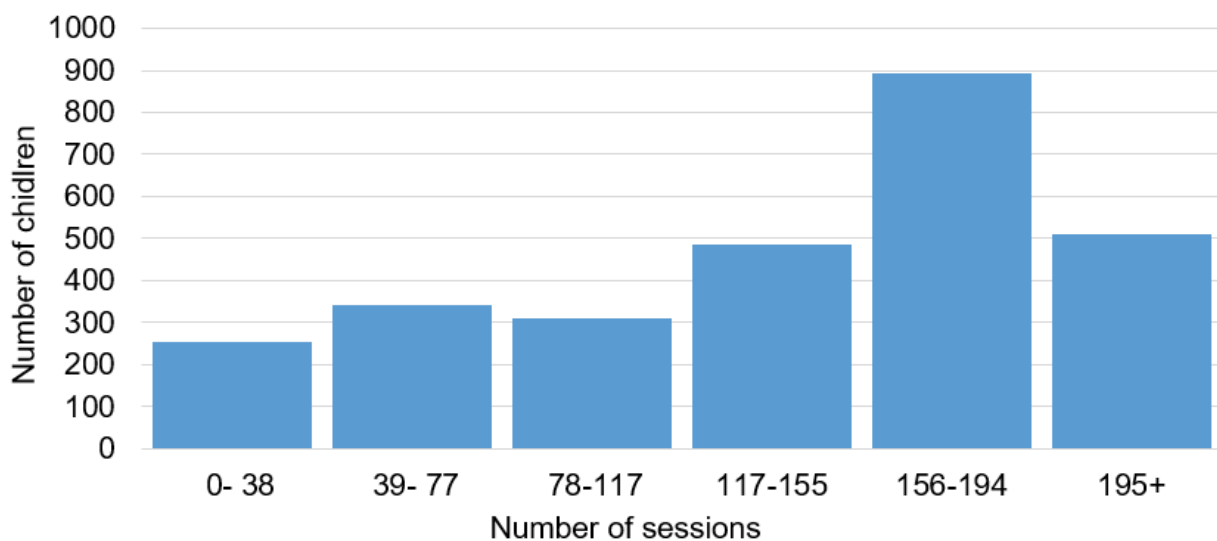
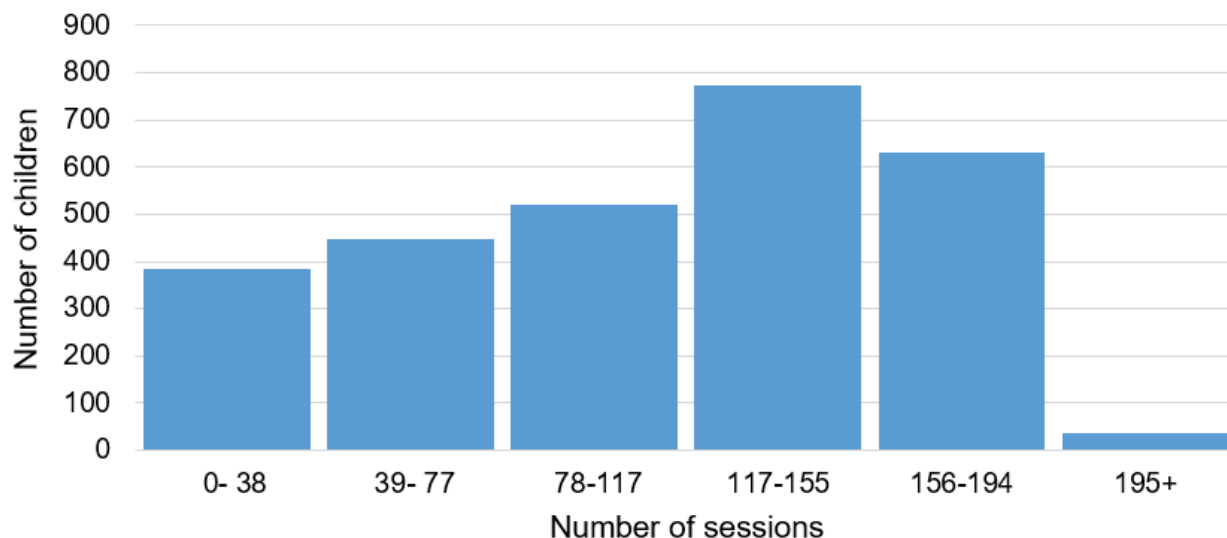


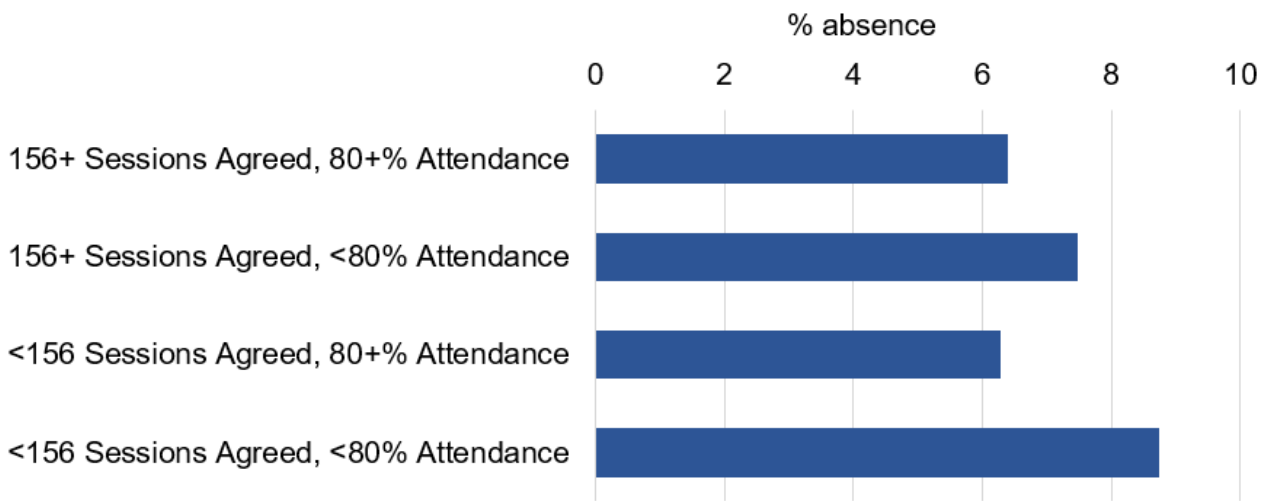
Figure 2: Children in Flying Start childcare settings by sessions attended, December 2012 to March 2019



Primary school attendance

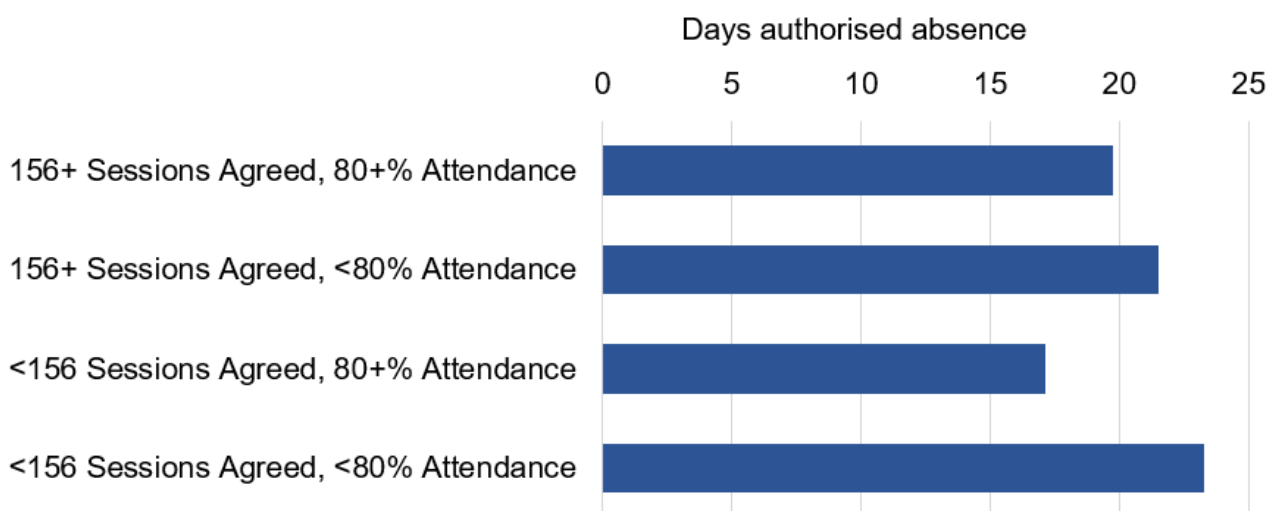
When analysed by childcare subgroup, children with lower attendance at childcare tended to have higher levels of overall (authorised and unauthorised) absence from primary school than those with higher attendance at childcare. This was the case for children with both high and lower take up at childcare. This indicates a possible relationship between percentage attendance in Flying Start childcare and attendance in primary school.

Figure 3: Primary school absence, by Swansea Flying Start childcare subgroup, 2017/18



As with the overall absences, those with lower attendance at childcare had higher levels of both authorised and unauthorised absence in primary school (Figures 4 and 5).

Figure 4: Authorised school absence, by Swansea Flying Start childcare subgroup, 2017/18

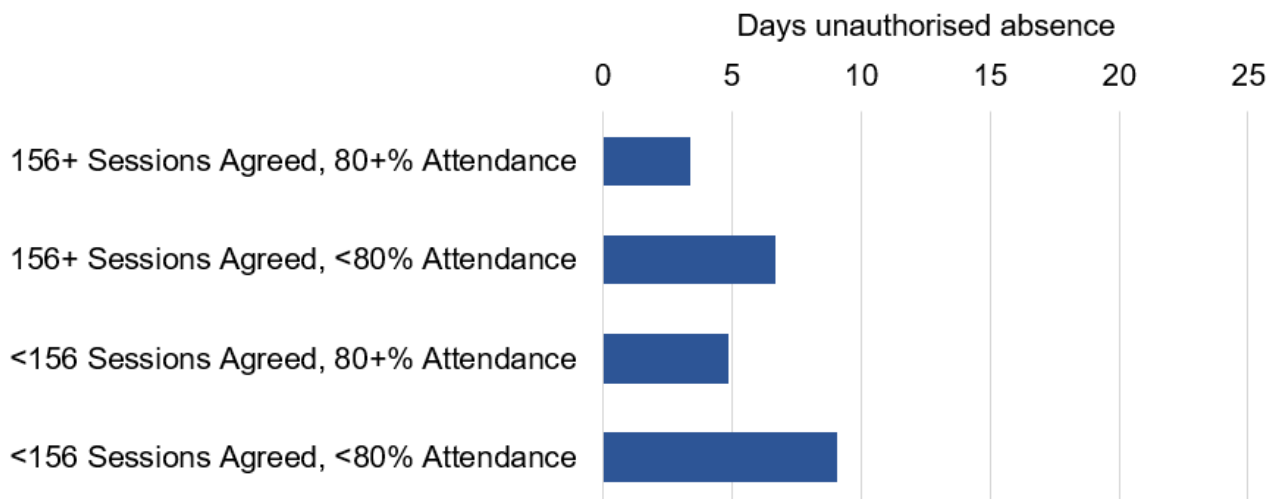


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Figure 5: Unauthorised school absence, by Swansea Flying Start childcare subgroup, 2017/18



Health outcomes

The graphs below explore potential relationships between childcare dosage and health outcomes. The Emerging Findings report did not suggest any potential relationship between exposure to the Flying Start programme and A&E attendances. This was based purely on registration with the programme, however, and did not take into account the levels of interaction children may or may not have had with Flying Start. This evidence brief represents the first time that the dosage of an element of Flying Start has been analysed, so whilst Flying Start childcare is not as focused on improving health outcomes as the health visiting element, higher levels of interaction with childcare may be used as a proxy for higher levels of interaction with the health or parenting aspects of the programme. It is also possible that interaction and advice from childcare experts and nursery nurses may affect a parent's decisions to attend A&E and/ or hospital.

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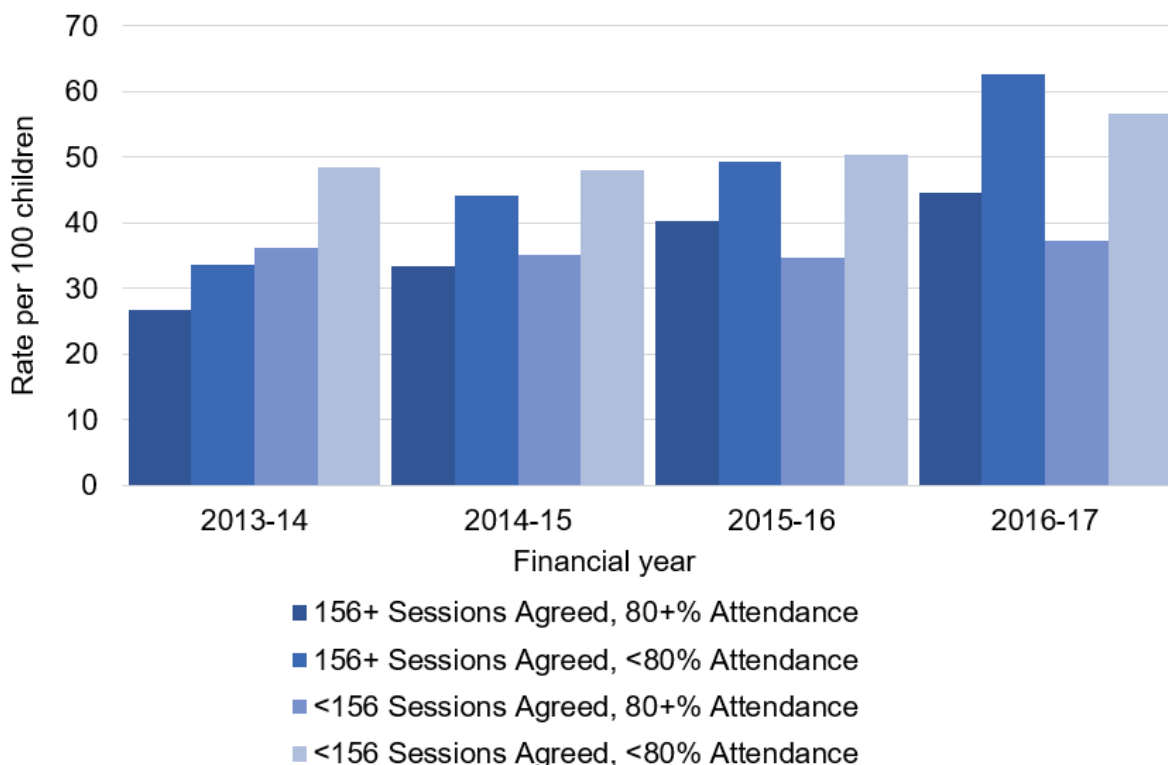
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Accident and Emergency (A&E) attendances

Figure 6 shows the rates of attendance at A&E departments in Wales before the age of five, by levels of childcare take up and attendance, calculated per 100 children by financial year. This may include attendance before, during or after a child was receiving Flying Start childcare.

When broken down by Childcare Subgroup it is evident that whilst A&E attendance rates have increased since 2013-14 they tend to be higher for those with lower childcare attendance. This indicates that the two may be related, as may be expected, as injury or illness may prevent children from being able to attend childcare. There may also be a number of factors which affect this, which will need further investigation in subsequent reports.

Figure 6: A&E attendances, by Swansea Flying Start childcare subgroup, 2013-14 to 2016-17



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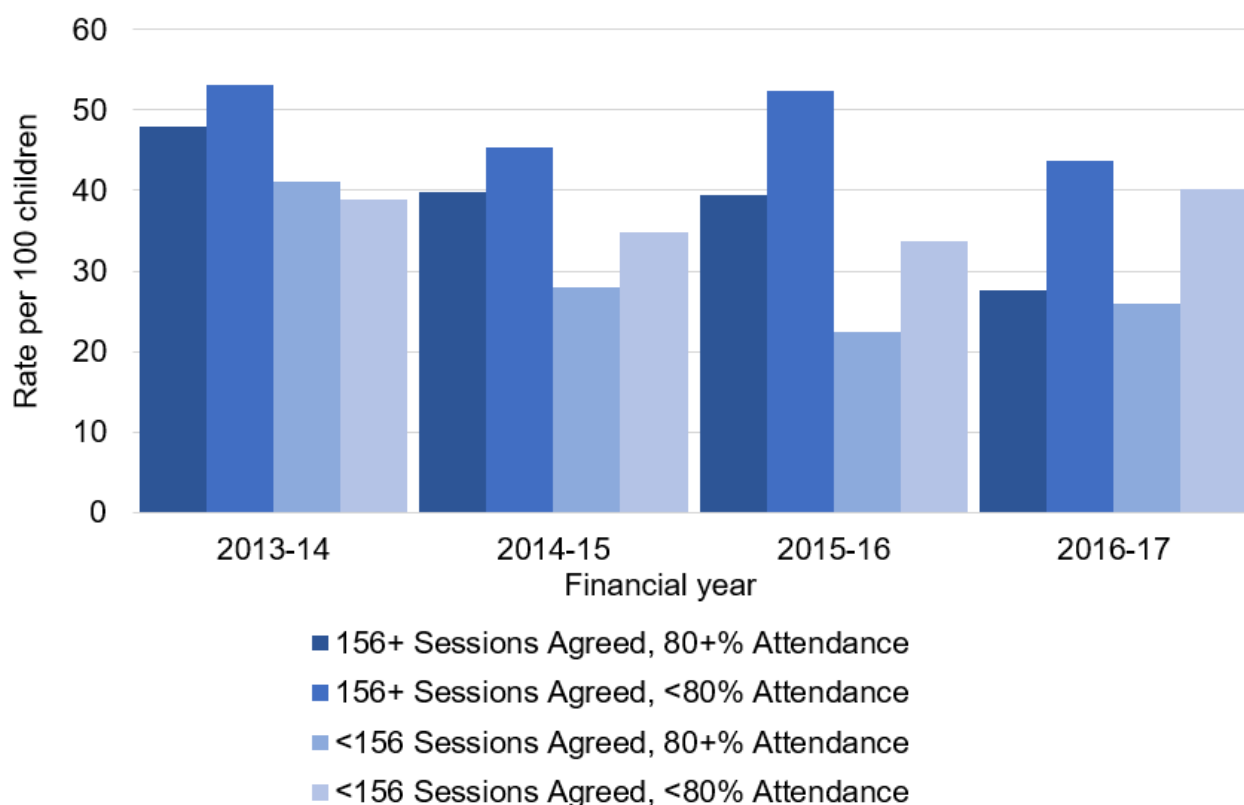
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Hospital admissions (PEDW)

Hospital admission rates for children in Flying Start childcare has been calculated for children under the age of five, on the same basis as the A&E attendance rates above.

All subgroups demonstrated a decreasing hospital admissions rate by 2015-16 as shown in Figure 7. There was then a slight increase by 2016-17 relative to 2013-14 for those with lower take up and lower attendance at childcare. This indicates that hospital admissions and lower attendance in childcare settings may be related, as may be expected. This may be due to serious illness or chronic conditions but will need further investigation.

Figure 7: Hospital admissions, by Swansea Flying Start childcare subgroup, 2013-14 to 2016-17



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5. Future releases

The next evidence brief for the Flying Start Data Linking Project, is planned for publication in 2020.

Future releases may:

- examine Flying Start children's educational attainment
- consider levels of engagement with the health visiting element of the programme
- examine the extent to which Flying Start has achieved the outcomes as envisaged in the Flying Start programme logic model
- analyse data from further local authorities.

6. Key quality and methodology information and limitations

Timeliness and punctuality

The aim of this evidence brief is to publish analysis as soon as possible using the available data. This data includes childcare data which is now contained in the SAIL databank. As the data in SAIL is regularly updated, it would be possible to repeat the analysis in future years. This analysis uses data the data available as at September 2019.

Comparability and coherence

No individual level data were available at the time of this analysis for the remaining two elements of the Flying Start Programme (Parenting Support and Speech, Language and Communication (SLC) Support). Some individual level Flying Start health data was used in the Emerging Findings report but it was not used for this analysis. It should be noted that children in the Flying Start Childcare sub-groups may differ across a range of characteristics (e.g. socio-economic status, age of parent, home learning environment) and differences in

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education and health outcomes may be associated with these characteristics rather than amount of and Flying Start Childcare or Flying Start Childcare attendance.

Limitations

This analysis has not taken into account other factors which may affect education and health outcomes (e.g. age or socio-economic status of parents or the home learning environment). These may be considered in future analysis of Flying Start using a data linking approach.

The data used for this analysis does not cover all children in Flying Start settings in Swansea since the start of the programme, but only those for which data are available. Neither does the data include children's attendance at other, non-Flying Start childcare settings. Any conclusions drawn relate only to Flying Start childcare settings in Swansea and do not relate to non-Flying Start childcare settings or childcare settings in general.

7. Acknowledgements

ADR Wales is part of the Economic and Social Research Council (part of UK Research and Innovation) funded ADR UK.

Laura Herbert (Swansea University) and Tony Whiffen (Welsh Government), along with other members of the ADR Wales team have worked collaboratively to produce this article.

City and County of Swansea Council have produced data on childcare and health interventions of Flying Start children and uploaded this data to the SAIL Databank. They have also collaborated with ADR Wales analysts when writing the report to provide an insight into how the Flying Start programme is delivered in Swansea. Their input is gratefully received.

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We welcome any feedback on any aspect of this report. Please send your feedback by email to adruwales@gov.wales.

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