

# Reducing the impact of visitor travel: Reflections on Hay Festival Hay-on-Wye, Wales



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HAY FESTIVAL

AFRICA AMERICAS ASIA EUROPE MIDDLE EAST

## Acknowledgements

In preparing this report we are grateful to all visitors that took part in the survey and telephone interviews. We would also like to acknowledge the support of Cardiff University, in particular the ESRC BRASS Research Centre, CUROP Programme and ESRC Impact Acceleration Account Programme, who provided the funding for this research.

# Executive Summary

Hay Festival in Wales has (since 1998) changed quite dramatically in terms of its scale and scope. The festival is now held over 11 days, and the number of events has grown to several hundred.

As the festival has continued to grow, its organisers have become increasingly aware of the impact that additional visitation may have on the environment.

## **This research aims to answer the following questions:**

- What is the environmental impact associated with visitors attending the Hay Festival in Hay-on-Wye?
- What consumption behaviours of visitors have the largest environmental impacts?
- How significant is visitor travel in terms of the overall environmental impact of the festival?
- What factors are influencing visitor travel choices to the festival?
- What would encourage visitors to travel to the festival using more sustainable forms of transport?

The research consisted of two parts. The first involved conducting face to face surveys with over 650 visitors who attended the 2012 Hay Festival. The survey was used to collect information on their duration of visit, overnight accommodation, travel, and purchase of food and drink. The second part involved conducting telephone interviews with 34 visitors from Cardiff, Herefordshire, the Midlands and London who attended the Festival in 2015.

## **The main findings from the research are:**

- The environmental impact of the festival was estimated by calculating its 'ecological footprint'. This is the land area required to support the resource demands of visitors', and is measured in terms of 'global hectares'. Visitors' total footprint was estimated to be 3,300 global hectares. This is equivalent to 3,500 times the area of the pitch at Cardiff's Millennium Stadium.
- The ecological footprint of the average visitor at the Hay Festival was 1.9 times greater than if they



had not attended the festival and gone about their everyday activities at home.

- The main contributor to the ecological footprint was travel. The average visitor travelled 710 kilometers to attend the festival. The largest contributors to the travel footprint were the car (63%) and international air travel (32%).
- Physical environmental and personal factors influenced visitors' method of travel to the festival.
- Physical environmental factors included: accessibility to overnight accommodation, type of overnight accommodation, proximity to public transport services (at home and the festival), convenient and accessible public transport services, travel time and number of transport changes.
- Personal factors included: autonomy, lack of awareness of existing public transport services, financial costs, travelling with young children, and mobility issues. The environmental impact of travel was found not to influence visitors' choice of transport mode.
- Factors influencing visitor travel choices were found to vary depending on their length of stay, and if they stayed in overnight accommodation.

This research highlights that there are significant environmental impacts associated with the increased visitors attending the Hay Festival. The research has identified which visitor consumption activities have the greatest environmental impact, and factors which are influencing visitors' choice of travel. This policy relevant information could be used to help address the environmental impacts of future festivals, and events more generally.

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# Introduction

Major events and festivals are becoming one of the fastest growing areas in the tourist industry. A key reason is that they are considered by organisers and promoters as opportunities from which to generate additional income, increase employment opportunities, promote tourism, and enhance the appeal of a tourist destination.

Wales hosts a number of annual major festivals. Examples include, The Green Man Festival, Wakestock Gwyl y Mor (Festival of the Sea), Laugharne Weekend, Abergavenny Food Festival, Cardiff Festival and the National Eisteddfod.

Although major festivals can generate economic impacts (locally and regionally), the consumption behaviours of visitors can also result in significant environmental impacts. For example, how visitors travel to a festival, the type of food and drink they purchase, their preferred choice of overnight accommodation, and whether they recycle.

## **This report aims to investigate the following:**

- What is the environmental impact associated with visitors attending the Hay Festival?
- What consumption behaviours of visitors have the largest environmental impacts?
- How significant is visitor travel in terms of the overall environmental impact of the festival?
- What factors are influencing how visitors travel to the festival?
- What would encourage visitors to travel to the festival using more sustainable forms of transport?



# Hay on Earth

# Hay Literary Festival

The Hay Literary Festival is an annual festival held in the rural town of Hay-on-Wye in Wales (UK). The town has a resident population of 1,500, and is located on the Welsh side of the Wales-England border. It is also located on the edge of the Brecon Beacons National Park, which is one of three designated National Parks in Wales.

The Festival was founded in 1988 with a relatively small audience of some 1,000 visitors. Since then it has changed quite dramatically in terms of its scale and scope. Initially held over a couple of days, the festival is now held over 11 days. The number of events has also grown from 25 to more than 700. To accommodate its growth, in 2005 the main festival moved to a much larger site located on the edge of the town. The festival site contains the venues, a number of exhibitors, food and drink outlets, a Hay Festival merchandise shop and a bookshop.

Alongside the growth of the main Festival, the organisation now also runs Festivals all over the world including in Colombia, Ireland, Mexico, Spain, Peru and Bangladesh.

## 'Greening' the Festival

As the Hay Festival has continued to grow, its organisers have become increasingly aware of the impact the additional visitation may have on the environment. In response, the Festival's organisers appointed a Sustainability Director in 2006 and soon after launched its 'Greenprint' Programme (also known as 'Hay-on-Earth').

The Programme aims to:

- audit, assess and introduce changes to reduce the direct environmental impacts of the Festival (such as energy use, procurement, waste and energy);
- enable visitors to make more sustainable choices, such as travelling to the Festival by public transport rather than by car;
- include a programme of Festival events on a range of sustainability issues, with the aim of engaging, educating and inspiring individuals to make changes when they leave the Festival.

In terms of addressing the environmental impacts of the Festival, to date its organisers have focused primarily on minimising the festivals direct environmental impacts: waste, transport, procurement and venues.

## Achievements to date (2013)

Achievements	
Reduced use of resources (including printed material)	35%
Reduced use of diesel	20%
Reduced use of electricity	15%
Renewable energy onsite	100%
Recycling of waste produced onsite	75%
Composting food waste from onsite	4.8 tonnes

The Festival uses BS8901 and ISO20121 as their main management tools and they are signatories to the Welsh Government's Sustainable Development Charter to demonstrate their commitment towards sustainable development (Welsh Assembly Government, 2010).



# The Research

Our research initially focused on assessing the environmental impacts of the Hay Festival, with a specific focus on its visitors. As discussed in Part A, the research identified that visitor travel had the most significant impact. Following this, we then focused on identifying those factors which influenced visitors' choice of travel to the festival. This is discussed in Part B below.

## Part A - Assessing the Environmental Impact of Visitors

The aim of this part was to provide an estimate of the environmental impact of visitors' physical consumption associated with the 2012 Hay Festival in Wales. It excluded the consumption activities of the festival organisers, volunteer staff, artists, caterers, speakers and exhibitors.

The environmental impact of visitors was assessed using the ecological footprint. This is the area of land and water required to support the resource demands and consumption patterns of visitors, and is measured in terms of 'global hectares' (gha). A hectare is approximately the same size as a football pitch.

The data used to calculate the environmental impact was based on a survey of over 650 visitors who attended the festival in 2012. Visitors were surveyed at the festival site on four days. Results from these four days were used to inform estimates of visitor consumption patterns for non-surveyed days. The survey was used to collect information on visitors' reasons for attending the festival, duration of stay, travel, purchase of food and drink, type of overnight accommodation, and spending on a range of items.

### Visitor Home Location

Location	%
UK	98.0
England	70.3
Wales	28.2
Rest of UK	1.4
Rest of Europe	0.8
Outside Europe	1.2

### Visitor reasons for attending Hay Festival

An estimated 100,000 visitors attended the Festival in 2012. This figure was provided by Hay Festival and was based on the number of session-tickets sold, number of ticket sales, and a percentage for free non-ticketed events. As the festival site can be accessed by the general public, a number of visitors may have visited the festival site as part of a visit to the local area, rather than to specifically attend one of the festival's events. This issue was accounted for in the analysis to avoid overestimating the environmental impacts. The table below shows visitors' main reasons for attending the festival.

### Reasons for attending Hay Festival

Reason	%
Attend a specific session(s)	72.8
Experience a literature festival	35.0
Day out	23.8
Meet artists	16.0
Pay a visit to Wales	3.9
Part of a visit to Brecon Beacons National Park	2.2
Experience a green/sustainable event	3.3
Other reasons	4.5





## Visitors' Impacts

The visitor survey was the key information source used to estimate the environmental impacts of the Hay Festival. A summary of the ecological footprint results are shown in the table below. Based on the analysis of visitors' physical consumption of resources at the festival, their 'footprint' (or land area) was estimated to be 3,360 global hectares. This is equivalent to 3,500 times the area of the pitch at Cardiff's Millennium Stadium.

When reflecting on the scale of the ecological footprint of such an event, it is useful to compare the figure with what visitors' footprint would have been had they not attended the event, but gone about their regular everyday activities at home. The study

found that the ecological footprint of the average visitor at Hay Festival was 1.9 times greater than if they have not attended the festival. A key reason for visitors having a larger footprint at the festival was due to them engaging in different patterns of consumption (i.e., different travel choices, food choices and overnight accommodation). These different consumption patterns were more resource and energy intensive, and so resulted in a larger footprint.

The additional footprint that was generated by spectators attending Hay Festival was 1,590 global hectares. This was calculated by subtracting what visitors' Footprint would have been if they stayed at home, from the total festival footprint for each of the components listed in the table below.

## Summary of Ecological Footprint Results

Category	Visitor Total Ecological Footprint (gha/festival duration)	Visitor Additional Ecological Footprint (gha/festival duration)	Visitor Ecological Footprint at home (gha/festival duration) <sup>1</sup>
Food and Drink	260	-340	600
Accommodation	1,100	190	910
Travel	2,000	1,710	290
Total	3,360	1,560	1,800

<sup>1</sup> Estimates are based on consumption figures for the average Cardiff resident in 2006 for the same number of days visitors spent at the festival (i.e., 300,000 – 3 per visitor) (Collins et al., 2005).



## Environmental Impacts of Visitor Travel

The study revealed that **the main contribution to spectators' total footprint was their travel to and from the festival. Visitors travelled 71 million kilometres to attend the Festival, with the average visitor travelling 710 kilometres.** Fifty-nine percent (59%) of the total distance travelled by all visitors was by car. Thirty-five percent (35%) of distances travelled by visitors was by air, and the majority of this was international air travel. Rail and bus travel accounted for 3.6% and 1.5% of the overall distances travelled. The following table shows those transport methods that were used by UK and non UK spectators travel to the Festival.



### Mode and distances travelled by UK and Non-UK Visitors

Mode of travel	UK visitors % distance travelled	Non-UK visitors % distance travelled
Air	0.1	95.0
Car	91.0	3.7
Rail	5.1	0.9
Bus	2.0	0.1
Campervan	0.9	0.0
Coach	0.4	0.0
Ferry	0.0	0.5
Walk/Cycle	0.01	0.0
Other <sup>1</sup>	0.1	0.0
<b>Total Distance (km)</b>	<b>45 million</b>	<b>26 million</b>

<sup>1</sup> Includes motorcycle, taxi

The overall distance travelled by spectators – to and from, and to their overnight accommodation – and the mode of transport used resulted in a footprint of 2000 global hectares (see Table top next page). The largest contributors to the travel footprint were the car (63%) and international air travel (32%). Travel by bus and rail accounted for only 2.0% and 1.9% of the overall travel footprint, respectively.

## Visitor travel and corresponding Ecological Footprint results

Mode of travel	Percentage of total distance travelled [%]	Percentage of travel Ecological Footprint [%]
Air	35.0	32.0
Car	59.0	63.0
Rail	3.6	1.9
Bus	1.3	2.0
Campervan	0.6	0.9
Coach	0.2	0.1
Ferry	0.2	0.1
Walk/Cycle	0.005	0.0
Other <sup>1</sup>	0.1	0.2
<b>Total</b>	<b>71million km</b>	<b>2,000 gha</b>
<b>Per average visitor</b>	<b>710 km</b>	<b>0.01 gha</b>

<sup>1</sup>Includes motorcycle, taxi

The next largest contributor (after travel to/from the Hay) to the ecological footprint was related to overnight accommodation. Sixty-one percent (61%) of visitors stayed overnight, and spent 240,000 bednights in overnight accommodation in Hay-on-Wye or surrounding towns and villages. This is equivalent to 3.9 bednights per visitor. The largest proportions of bednights were spent in campsites (32%), self-catering accommodation (22%), bed and breakfast/guest houses (20%), with family and friends (13%), and hotels (9.2%). Visitors staying in overnight accommodation used an estimated 7.8 million kilowatts of energy (78 kWh per average visitor).

Spectators purchased an estimated 270 tonnes of food and drink during the festival. This included purchases made at the festival site, at Hay-on-Wye (i.e., cafes, restaurants, self-catering accommodation, supermarkets), and at overnight accommodation (i.e. bed and breakfast, self-catering accommodation, hotels). This resulted in an ecological footprint of 260 global hectares, and, is almost 50% less than what it would have been at home. There are several possible reasons for this lower footprint. Firstly, 49% of visitors

did not stay in overnight accommodation, and so would have consumed a proportion of their daily intake of food and drink at home. Food and drink consumed at home was not included in the analysis. Secondly, a proportion of visitors (21%) had brought their own food and drink to the festival site, and this was also not included in the analysis. There is also a possibility that some visitors may have how much food and drink they would purchase during their entire visit to the festival.

### Location of visitor overnight accommodation

Location	%
Hay-on-Wye	43
Rest of Brecon Beacons National Park	27
Rest of Wales	12
England	18

## Other Findings

69% of visitors were 'repeat visitors' and had previously attended the festival on at least one occasion

32.7% of visitors used the festival shuttle bus to/from the festival site and Hay-on-Wye town

6.8% of visitors had used the bus link between Hereford Train Station and Hay-on-Wye in order to travel to the Festival

1.7% of visitors had used the Sky sponsored Shuttle Bus service

38% of visitors purchased food and drink at the festival site, 31% at outlets in Hay-on-Wye, and 21% brought their own

92% of visitors either 'strongly agreed' or 'agreed' it was important that Hay Festival considers its environmental impact

89% of visitors either 'strongly agreed' or 'agreed' that visitors should take responsibility for their own environmental impacts

64% of visitors considered Hay Festival to be an 'environmentally conscious' festival

53% of visitors were aware of the Festival's Hay-on-Earth Programme

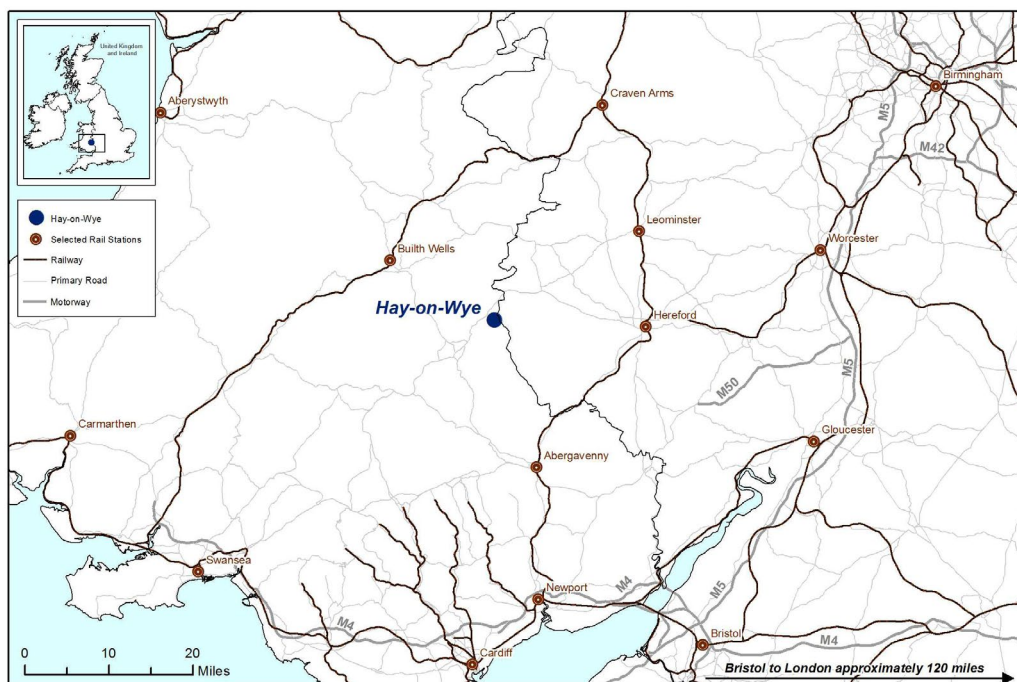
## Part B - Understanding visitor choice of travel

This part of the research aimed to identify factors that influence visitors' method of travel to the Festival. It involved conducting telephone interviews with visitors that had attended the Hay Festival in 2015.

Participants were recruited from the Hay Festival's database of 8,600 visitors who had purchased online

tickets for festival events. Visitors were randomly selected from four key areas where the majority of visitors had travelled from, namely: Herefordshire, Cardiff, Midlands and Greater London. A total of 34 visitors were interviewed for this study. Participants were asked a series of questions which focused on three key themes: (a) travel to festival in the current year (2015), (b) travel to festival in previous years and, (c) future travel to the festival and potential incentives that would encourage them to travel by a different mode other than car.

### Maps showing the geographical location of Hay Festival, and public transport connections



Geographic data sourced from Ordnance Survey.  
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## The Findings

Ninety-four percent (94%) of visitors interviewed had travelled to the festival by car, and two percent (2%) had travelled by campervan/motorhome. The table below provides a summary of the physical-environmental and personal factors, which had influenced visitor choice of travel mode to the festival.

### Factors influencing choice of travel

Theme	Influencing factors	Number of participants
Overnight accommodation	Access to overnight accommodation in Hay-on-Wye and surrounding area.	18
	Travelling with luggage and/or camping equipment	7
Autonomy	Convenience	9
	Undertaken other activities during stay (e.g. visiting friends, shopping, eating out)	6
	Collecting additional passengers on route to festival	2
Travel Time	Less time needed to travel by car, no transport changes	18
Public transport	Limited bus service (frequency)	16
Routine	Routine choice (did not consider other methods)	14
Awareness of existing public transport	Unaware of existing public transport services to the festival	11
Access to public transport services	Home location in a rural area	3
	Rural location of festival	5
Family	Travelling with young children	4
Financial	Travel by car is cheaper	3
Health	Health-related reasons	2

## Physical Environmental factors

A key factor found to influence participants' decision to travel by car was **accessibility to overnight accommodation**. Almost half of the participants had stayed in overnight accommodation as part of their visit to the festival. The Festivals' increasing popularity and the limited availability of overnight accommodation in Hay-on-Wye, means that visitors need to find accommodation outside the local area and travel to/from the Festival by car during their visit.

Participants' preferred **choice of overnight accommodation** also influenced visitor travel decisions. For those staying in camping accommodation, travel by car was considered the only feasible option.

**Proximity to public transport services** at visitors' home location and in Hay-on-Wye Festival was an important influencing factor. Participants living in rural locations had limited access to public transport, and so had no alternative but to travel by car. **Convenient and accessible public transport** services were also considered key to encouraging visitors to leave their car at home:

*"Convenience. It's all about convenience. I don't know about the public transport very much but I do know that public transport is a big problem. I know there is a train to Hereford isn't there but then you have to get a bus, it's just too difficult".* (male participant, Midlands)

**Travel time** was also an important influencing factor. Participants preferred to travel by car as it was the fastest mode of travel. **Travel by car was preferred as the journey was considered more direct and would not require any transport changes**. The festival's remote rural location and the inaccessibility of the nearest train station (in Hereford) also discouraged use of public transport

*"We've always travelled by car. Last year . . . we did look into the public transport... it was just going to take all day. When we looked into it, the shuttle bus was just not going to be often enough and not necessarily meet the train that we might be on. It would just take so much longer. And from where we live, it involves getting a train into Cardiff, before we even get the train to Hereford." (female participant, Cardiff)*

*"There are restrictions cos of the distance to the nearest train station from Hay, it seems odd that the festival has developed there when transport links are so poor, normally they're based where they're easily accessible and Hay Festival certainly isn't easily accessible so they probably, I think, they'd probably get more visitors if they had better transport links".* (female participant, Herefordshire)

The **environmental impact of travel** was not considered by visitors as being **an important consideration** when planning their journey to the Festival.



## Personal Factors

**Autonomy** was considered a key personal factor that influenced visitors travel choices. Travelling to the festival by car had a number of advantages: independence; reliability; flexibility to travel to other places during their stay, visit friends or collect other passengers. Public transport (rail and bus) was considered to have several disadvantages: unreliability, limited availability (particularly in the evening and weekends), limited final destinations, and time taken to travel.

**Lack of awareness of existing public transport services** was also highlighted by some participants. The Hay Festival website does contain a range of information on public transport, including rail and bus, however, some participants were not aware of the bus service available from Hereford Station to Hay-on-Wye. **Travelling with a young family and physical mobility** were also factors that had influenced visitors' choice of travel.

The **financial cost** of transportation also influenced visitor travel choice. Travel by car was considered cheaper than public transport modes.

## Visitors' future travel choices

This study involved asking participants what would encourage them to travel to the Festival by modes other than private car (i.e., public transport, car share or by a festival coach service), and whether any incentives would be effective.

Some participants felt that incentives such as discounts on festival tickets may encourage attendees to change their transport choice. However, the majority stated that increased awareness of local public transport services, and the provision of a good public transport service were considered most important.

**Two-thirds of participants indicated they would consider car sharing when travelling to the festival.** Suggestions to encourage car sharing amongst festival visitors included: ensuring information is easy to find on the Festival website, provide visitors with details via an email) following the purchase of tickets, providing an online App that would enable visitors to identify and connect with others travelling in the same direction. Reasons given for not wanting to car share with other visitors included personal safety and travelling with children.

*“effective, reliable, regular, cheap public transport – it just doesn't exist, not where we live anyway . . . if you do go on the bus, it costs twice as much as when you're using your car, so I can't see what the incentive is to use public transport when it's so much more costly than driving”. (female participant, London)*

Our analysis found some key differences in the factors influencing travel choices and participants' home location (i.e. Cardiff, Herefordshire, Midlands and London). For visitors travelling from Cardiff and Herefordshire, the following factors had influenced their decision not to use public transport modes: accessibility to public transport services (at their home location or Hay-on-Wye), travel time, and number of transport changes. This was because the majority of participants travelling from these locations were travelling to the festival and returning home on the same day.

Visitors travelling from the Midlands and London were more likely to stay in overnight accommodation during their visit, and their travel choices were influenced by the following factors: autonomy and convenience, accessibility to overnight accommodation and travel cost.



The **provision of a direct festival coach service** close to participants' home location was also highlighted as a popular option. However, the frequency of the service would be a deciding factor on whether to use the service or not.

A small number of participants expressed an interest in cycling to the Festival, and that cycling should be promoted as the main transport mode in and around Hay-on-Wye. The provision of changing facilities was considered important for those travelling further distances (i.e. more than 15 miles).



# Conclusions and Recommendations

This study set out to assess the environmental impact of visitors attending the Hay Festival including their travel, and to identify factors influencing their choice of travel. In doing so it has not only provided a better understanding of the scale of the impact, but also highlights the significant impact of visitor travel and reasons as to why visitors travel mostly by car.

Visitor activity as part of the festival – i.e., their travel, use of overnight accommodation, food and drink purchases, generated an average ecological footprint 1.8 times greater than what it would have been if they had stayed at home.

The telephone interviews provided insights into the decision making process of visitors' choice of travel mode and their constraints. An important conclusion is that encouraging shift from car to other modes is likely to require an array of infrastructure improvements and incentives tailored to the needs of the different segments of visitors.

Environmental impact assessment methods such as the 'ecological footprint' should form part of festival planning, and forecasting travel impacts by using projected visitor numbers. Our research highlighted that a significant contribution to the ecological footprint was visitor travel, and also those key factors which are influencing visitor travel choices. Organisers, sponsors and other stakeholders could use this information to strategies to influence visitor travel choices at future festivals.

A further recommendation is that successful strategies to reduce the environmental impacts of visitor travel, should be used as a benchmark for future festivals.

hay festival for  
hay fever  
children & families

# Reducing the impact of visitor travel: **Reflections on Hay Festival** **Hay-on-Wye, Wales**

## References

Collins A Flynn A and Netherwood A (2005) Reducing Cardiff's Ecological Footprint: A Resource Accounting Tool for Sustainable Consumption, Technical Report (WWF Cymru, Cardiff).

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