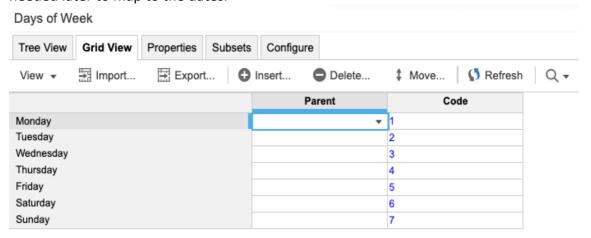
# Calculating the effect of events for the forecast

This document outlines how you can calculate the effect of events in the calendar. There are a number of steps, but it is worth persevering as the techniques are useful in many other use cases, especially the Fake Time to Real Time mapping.

I have assumed we are in 2019 and our forecast is needed for 2020.

ïme			
Model Calendar	Time Ranges		
	Calendar Type	Calendar Months/Quarters/Years	•
	Fiscal Year Start Month	Jan	~
	Current Fiscal Year	FY19: 1 Jan 2019 - 31 Dec 2019	•
	Number of Past Years	0	*
	Number of Future Years	1	*
	Current Period	Jul 19	•
	Include	Quarter Totals	
		Half-Year Totals	
		Year To Date Summary	

1. Set up a Days of Week list, with the codes matching the day of the week as below. This is needed later to map to the dates.



2. Create a Fake Days list. This list needs to cover the history (so in our case 2019). You could add these manually, but I will show you how you can do this using the existing time settings. This makes it easier to update for the next year.

### 3. Set up a Time by Day Module

You need this to map the days to the Days of the week as well as the mapping between fake time and real time. We will also use this module to create the Fake Days list. The module is dimensioned by day.

		1 Jan 19	2 Jan	19	3 Jan 19	4.	Jan 19	5 Ja	n 19	6 Ja	an 19	7 Jan 19	
Date		01/01/2019	02/01/20	19	03/01/2019	04/01	2019	05/01/20	)19	06/01/2	019	07/01/2019	0
Year		FY19	FY19		FY19	FY19		FY19		FY19		FY19	F
Current Year		FY19	FY19		FY19	FY19		FY19		FY19		FY19	F
Days only?		4		4	4		2,50		4/5		4	4	1
DOW		2	2	3	3	1	5	5	6	3	7	•	1
Day of Week List		Tuesday	Wednesd	lay	Thursday	Friday	,	Saturda	у	Sunday	/	Monday	Т
Fake Days List		1 Jan 19	2 Jan 19		3 Jan 19	4 Jan	19	5 Jan 19	)	6 Jan 1	9	7 Jan 19	8
- Fake Days Creatio	n												
Fake Days Text		1 Jan 19	2 Jan 19		3 Jan 19	4 Jan	19	5 Jan 19	)	6 Jan 1	9	7 Jan 19	8
History?		4		4/5	4		4,00		4,00		400	3	1
View Filter		4		$v_{ij}e^{i\theta}$	4		4,00		100		4,00	4	1
ne By Day		Formul	la in	Forma	it Ap	plies To	Time Scale	Time Range Model Calendar N		Start of Section	Brought-Forwa	rd Summary	
Date	START()			Date				Model Calendar N				None	
Year	PERIOD(	Date)		Year				Model Calendar N		Н	-	Last non-blank	
Current Year	PERIOD(	CURRENTPERIODSTART())		Year				Model Calendar N	ot Applicable			None	
Days only?	TRUE			Boolean				Model Calendar N				None	
DOW		Y(START())		Number				Model Calendar N				Sum	
Day of Week List		M(Days of Week, TEXT(DOW))		Days of W				Model Calendar N				None	
Fake Days List	FINDITE	M(Fake Days, Fake Days Text)		Fake Days				Model Calendar N				None	
				No Data	•			Model Calendar N			L	None	
Fake Days Text		EM(Time))		Text	-		Day	Model Calendar N	ot Applicable			None	
Fake Days Creation Fake Days Text History?		EM(Time)) irrent Year	= }		-		Day		ot Applicable		[		

At this point, the values for Fake Days list will be blank because we haven't yet populated the list. We set this line item up for future functionality. We don't actually need it for this use case, but it is best practice when mapping from time to fake time and back, to set up both mappings at the time of creation, just in case.

4. Set up a view to use as the import action into the Fake Days list.

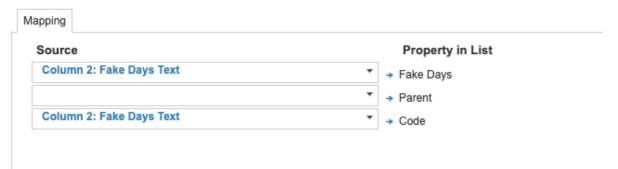


The view is filtered using the View Filter line item, filtering on the current year and removing any subtotals (we don't need these for calculations).



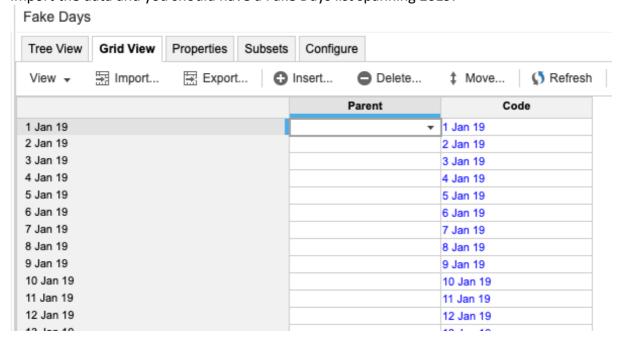
- 5. Save this view as Create Fake Days
- 6. Open the Fake Days list and create an import action using view from 5.

## Import: Fake Days from Community Posts / Time By Day.Create Fake Day

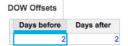


Note that I use the same format as displayed in the Time module for Name and Code. This makes it a lot easier to map using FINDITEM – No need for loads of text manipulation.

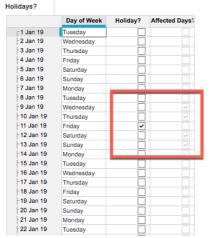
7. Import the data and you should have a Fake Days list spanning 2019.



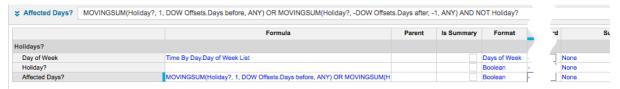
8. We now set up a Day of Week offset module to hold the range of days either side of the "event". In this example I have used 2 days either side. From experience it is best not to go too far either way otherwise you start to get overlaps. This module is not dimensioned by anything.



9. Now we will create a module Holidays? Module to track when the event took place.

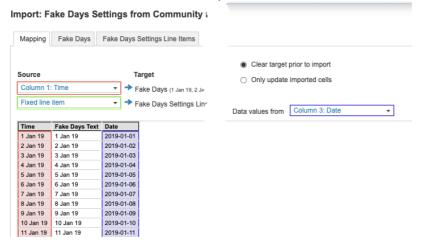


Let's focus on Friday 11<sup>th</sup> January. You see we flag the two days either side as affected days.

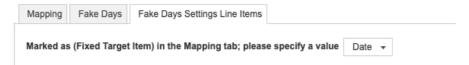


**Note**: Affected Days? Using the DOW offsets from 8 and the ANY aggregation method for moving sum. No need to convert the Boolean flag to a number and back

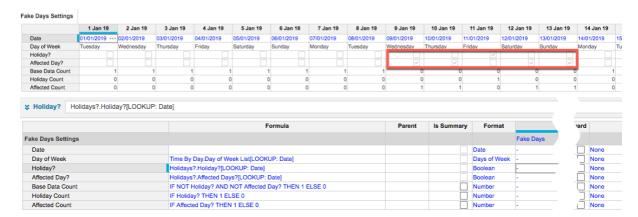
10. We now create a module dimensioned by Fake Days to map the Fake Days to real days and the statuses of the Holidays and affected days. We need to map the timescales based on the dates, so we can import the dates from the view we created in 4.



Import: Fake Days Settings from Community Posts / Time By Day.Create

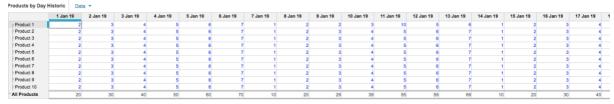


The module should look like this

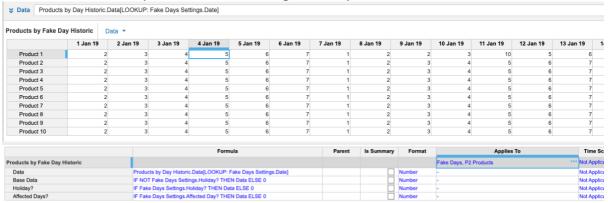


Note we've mapped in the flags from the Holidays? Module from real time to Fake time by using a LOOKUP on the real date. We need the counts to work out the average effect later

11. Let's assume we have the historic data in a model. In this case we are using a Time Range for efficiency, so this module only covers FY19



#### 12. We now create the equivalent module using Fake Days



## Let's focus on our event and the affected days either side



Products by Fake Da	y Historic	Р	roduct 1 ▼			
	9 Jan 19		10 Jan 19	11 Jan 19	12 Jan 19	13 Jan 19
Data		2	3	10	5	6
Base Data		2	3	0	5	6
Holiday?		0	0	10	0	0
Affected Days?		2	3	0	5	6

It's simple logic to allocate the data to the respective line item. We exclude the holiday from the Base Data

## 13. We now can calculate the effect for each Day of the Week

Average Affected / 'Average Data (excl Holidays)' - 1

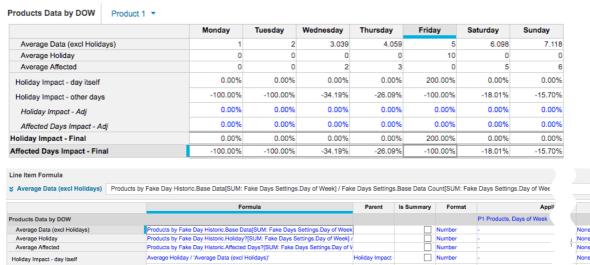
'Holiday Impact - day itself' + 'Holiday Impact - Adj'

'Holiday Impact - other days' + 'Affected Days Impact - Adj

Holiday Impact - day itself Holiday Impact - other days

Holiday Impact - Adj Affected Days Impact - Adj

Holiday Impact - Final Affected Days Impact - Final

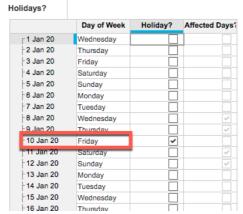


Affected Days In Holiday Impact

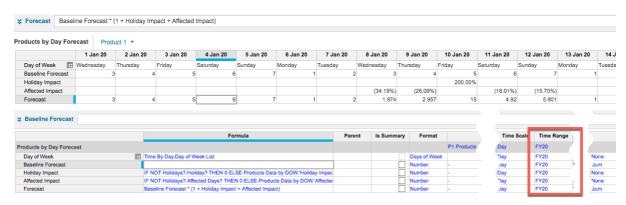
Affected Days I

Note we are summing out of the Fake Days module, something you can't do with real time. You'll also see I've added in some manual adjustment line items. From experience, it is easy to get some very strange numbers when using daily data. These line items are added to allow you to correct any such values. You could of course create max and min thresholds if you want.

14. Now let's use these values in our forecast. We will create a module dimensioned by real time, but again we'll use a Time Range to restrict the calculations to FY20 only. I have assumed that the Baseline Forecast is a manual input, although this is most likely to have been calculated from another source.



Note that in the forecast the equivalent holiday is Friday 10<sup>th</sup> January.



The formulae are not too tricky

- We use the Day of the Week as the LOOKUP into the impact calculation Best practice tips
  - We do use a subsidiary view for Day of the Week because this does not apply to products, and we want to display the Day of the Week to help understand and validate the calculation.
  - Also, because we expect most days not to be affected by holidays, we check for that first and return zero most of the time

I hope this helps, there are obviously lots of variations. The common ones I've used are:

- If you want to track different events individually you could add an events dimension to the modules
- You could use a rolling average to work out the base line calculation in 13 is your business is very seasonal
- You could do all of the calculations for another dimension such as Brand, if the impact of certain events affects brands in different ways