

# Attendance

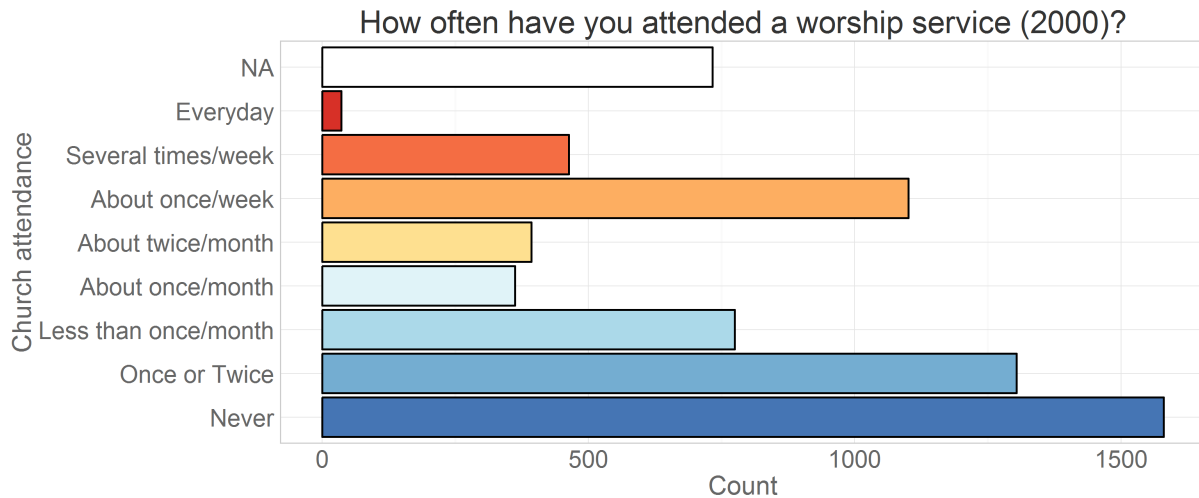
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Mapping church attendance in time

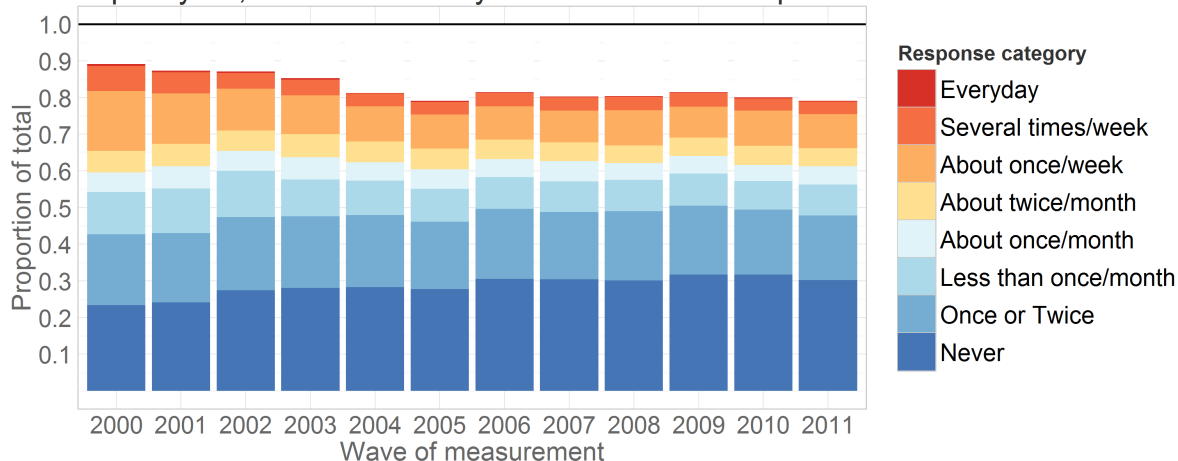
## 1 Cross-Sectional View

The focal variable of interest is **attend**, the item measuring church attendance for the year that preceded the interview date. The questionnaire recorded the responses on the ordinal scale.



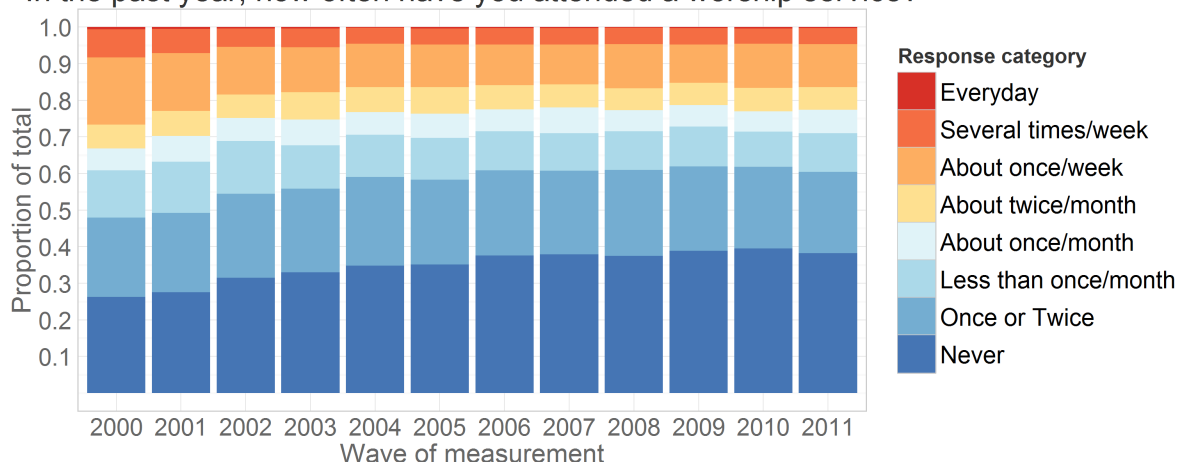
Creating frequency distributions for each of the measurement wave we have:

In the past year, how often have you attended a worship service?



Here, missing values are used in the calculation of total responses to show the natural attrition in the study. Assuming that attrition is not significantly associated with the outcome measure, we can remove missing values from the calculation of the total and look at prevalence of response endorsements over time.

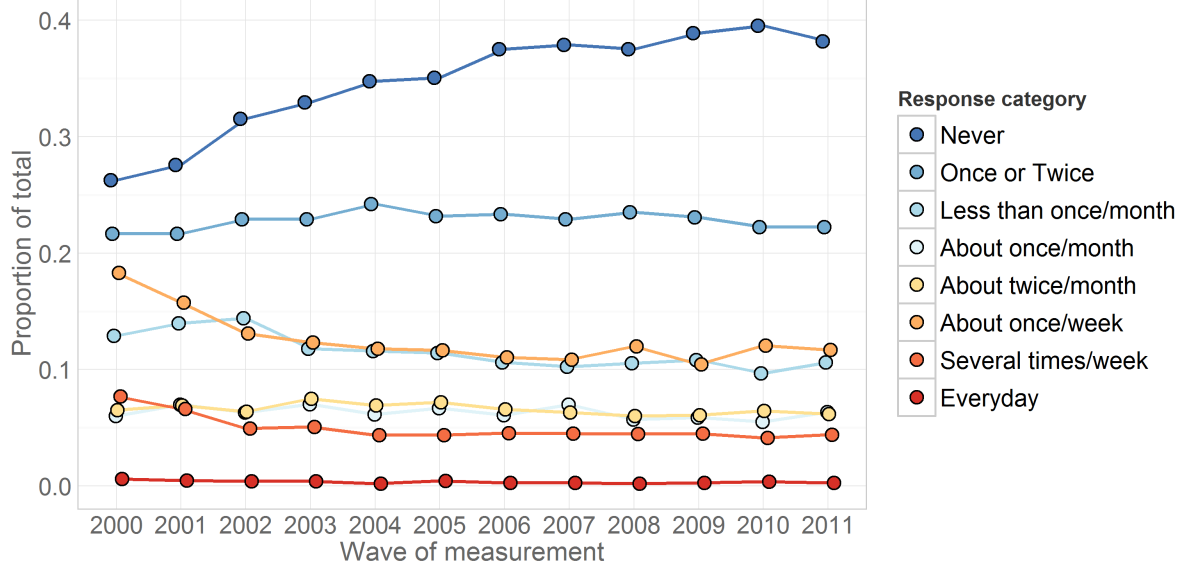
In the past year, how often have you attended a worship service?



## 1.1 Change in prevalences

Tracing the rate of change of prevalence in a line graph, we see more clearly which categories increase over time (e.g. "Never"), which decline (e.g. "About once/week"), and which stay relatively stable (e.g. "About twice/month").

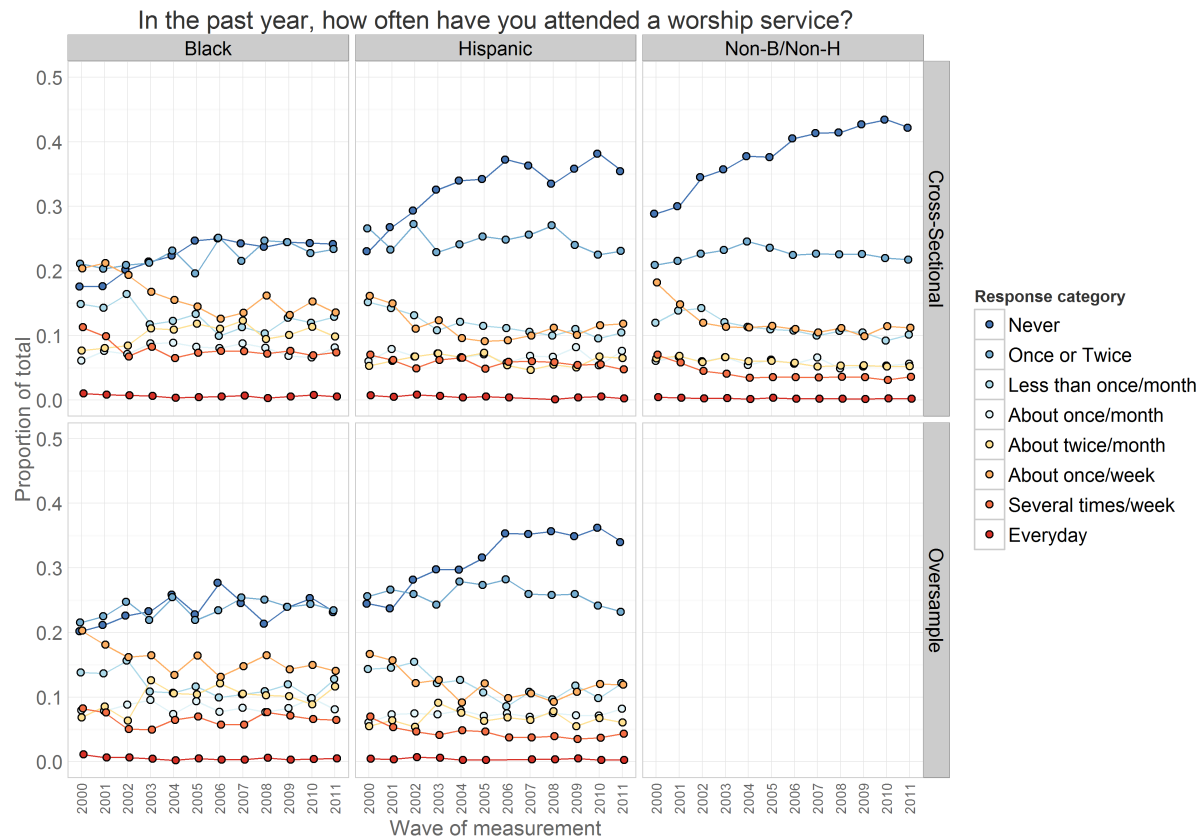
In the past year, how often have you attended a worship service?



## 1.2 Prevalence change and race

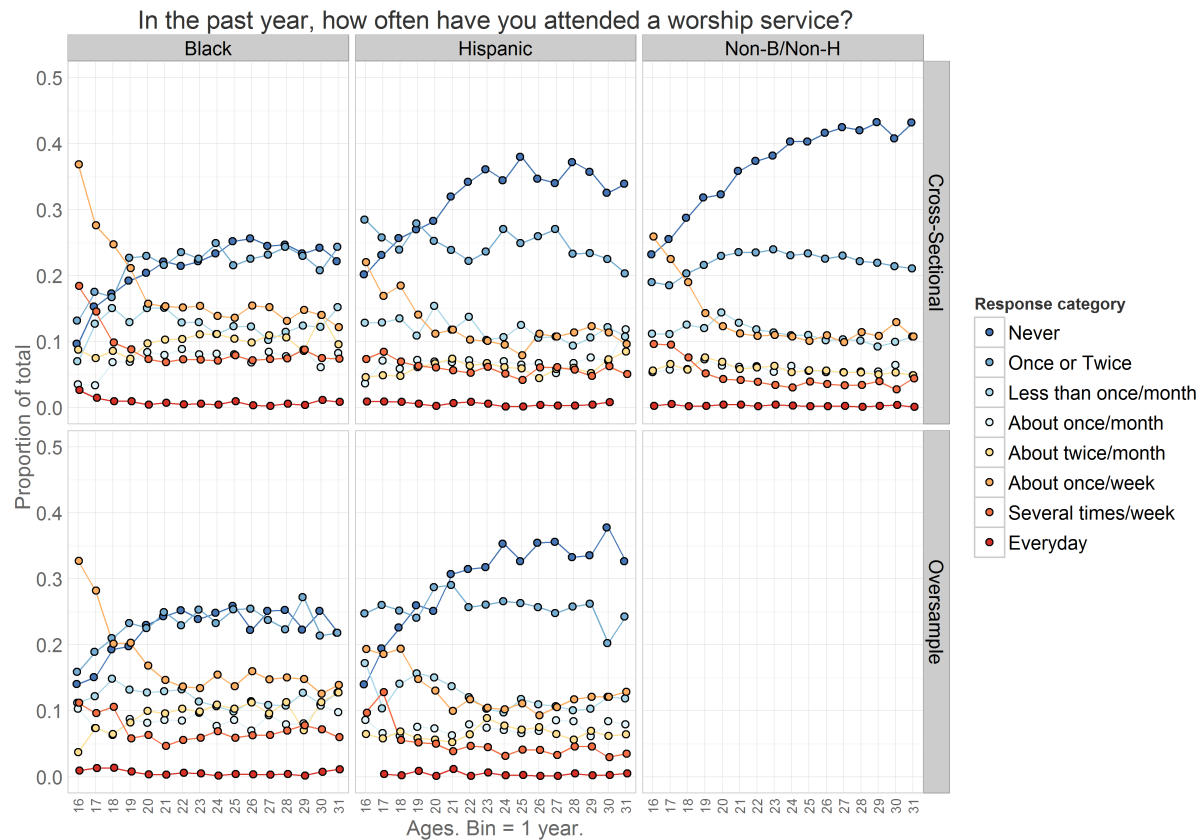
Inspecting the prevalence trajectories across races.

### 1.2.1 Attend over race and years

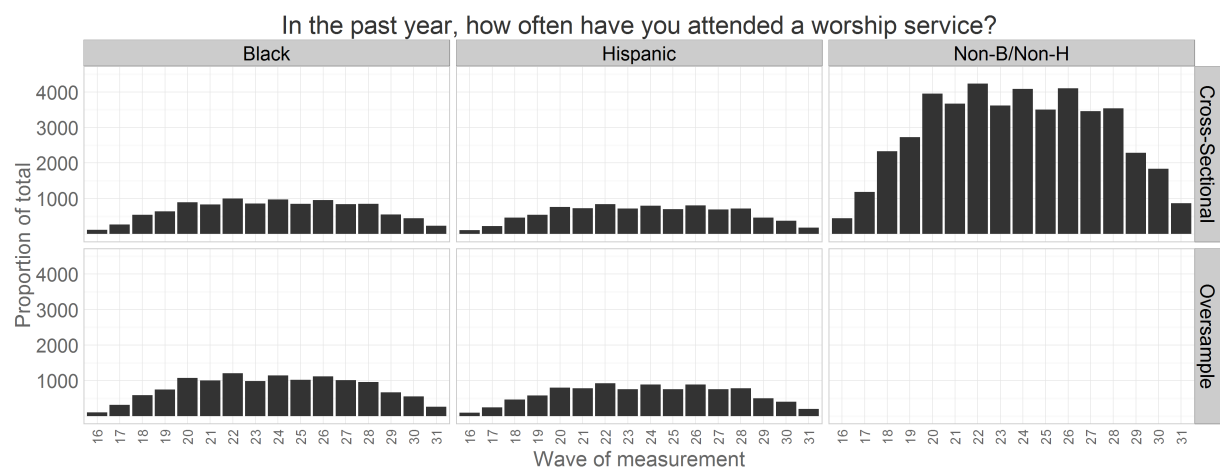


### 1.2.2 Attend over race and ages

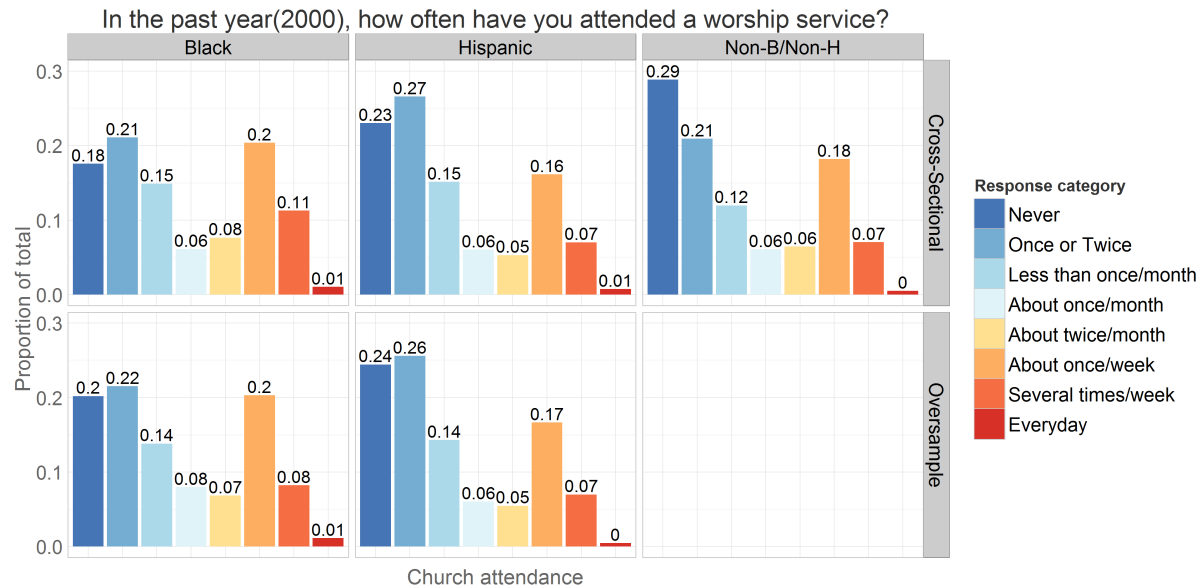
Bin includes all respondents who were +/- 6 months from a given age expressed as an integer.s For example, a 16 year-old is defined as an individual between 15.5 and 16.5 years of age at the time of the interview.



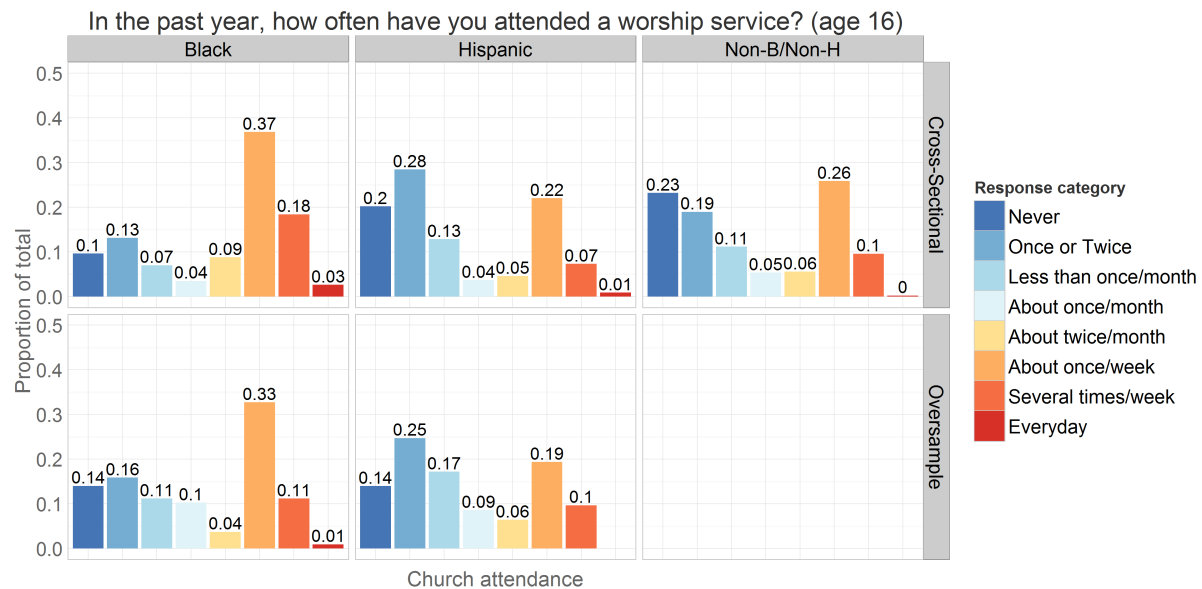
### 1.2.3 Count of respondents in age bins



### 1.2.4 Race and attendance for each year



### 1.2.5 Race and attendance for each age bin



## 2 Longitudinal View

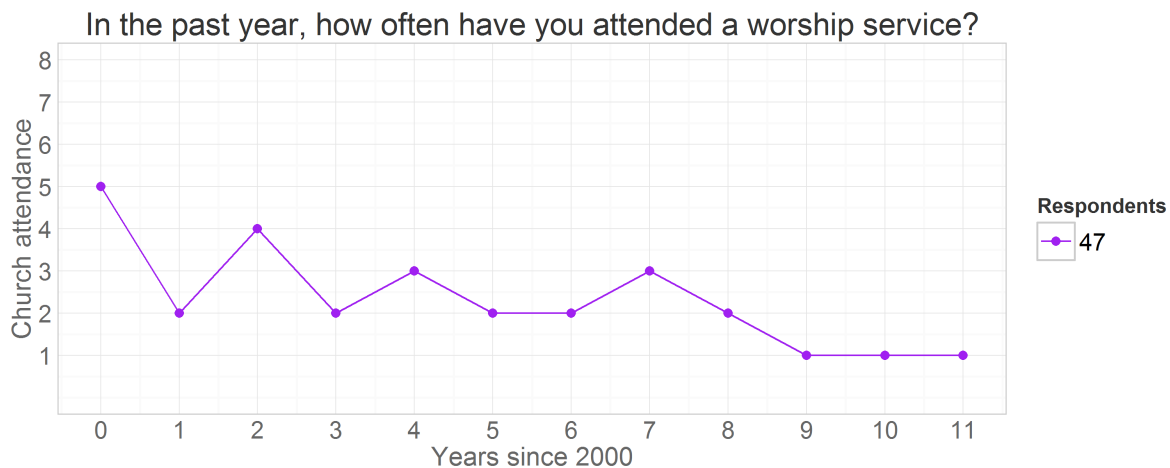
Graphs above shows change in the cross-sectional distribution of responses over the years. Modeling the change in these response frequencies is handled well by Markov models. LCM, however, works with longitudinal data, modeling the trajectory of each individual and treating attendance as a continuous outcome.

To demonstrate mapping of individual trajectories to time, let's select a dataset that would include personal identifier (**id**), cohort indicator (**byear**), wave of measurement (**year**) and the focal variable of interest - worship attendance (**attend**).

```
ds<- dsL %>% dplyr::filter(year %in% c(2000:2011), id==47) %>%
  dplyr::select(id, byear, year, attend, attendF)
print(ds)
```

	id	byear	year	attend	attendF
1	47	1982	2000	5	About twice/month
2	47	1982	2001	2	Once or Twice
3	47	1982	2002	4	About once/month
4	47	1982	2003	2	Once or Twice
5	47	1982	2004	3	Less than once/month
6	47	1982	2005	2	Once or Twice
7	47	1982	2006	2	Once or Twice
8	47	1982	2007	3	Less than once/month
9	47	1982	2008	2	Once or Twice
10	47	1982	2009	1	Never
11	47	1982	2010	1	Never
12	47	1982	2011	1	Never

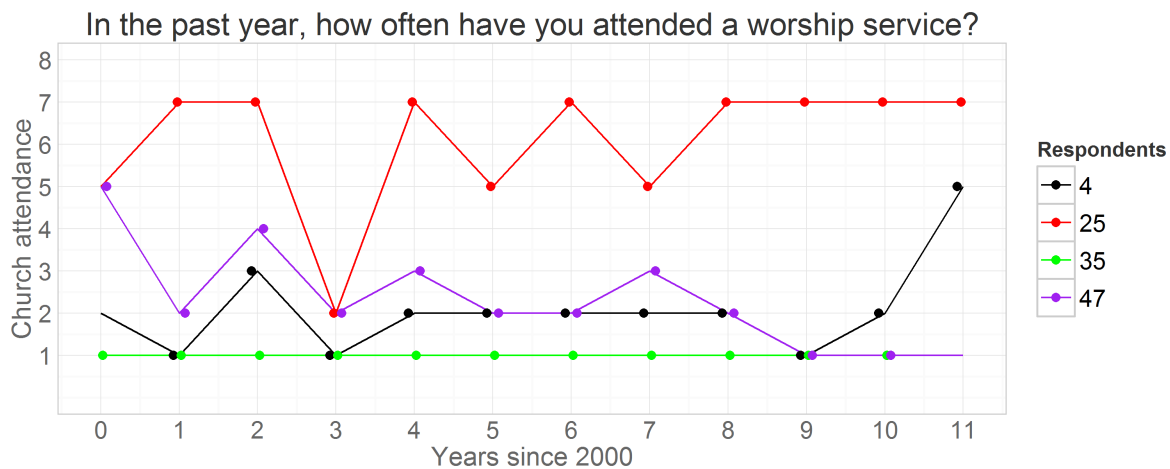
The view above lists attendance data for subject with id = 47. Mapping his attendance to time we have .



where vertical dimension maps the outcome value and the horizontal maps the time. There will be a trajectory for each of the respondents. Each of such trajectories imply a story, a life scenario. Why one person grows in his religious involvement, while other declines, or never develops an interest in the first place? To demonstrate how interpretations of trajectories can vary among individuals consider the following example.

## 2.1 Attendance over waves

Attendance trajectories of subjects with ids 4, 25, 35, and 47 are plotted in the next graph



The respondent `id` = 35 reported attending no worship services in any of the years, while respondent `id` = 25 seemed to frequent it, indicating weekly attendance in 8 out of the 12 years. Individual `id` = 47 started as a fairly regular attendee of religious services in 2000 (5 = “about twice a month”), then gradually declined his involvement to nill in 2009 and on. Respondent `id` = 4, on the other hand started off with a rather passive involvement, reporting attended church only “Once or twice” in 2000, maintained a low level of participation throughout the years, only to surge his attendance in 2011. Latent curve models will describe intraindividual trajectories of change, while summarizing the interindividual similarities and trends.

### 2.1.1 Changing the metric of time

Previous research in religiosity indicated that age might be one of the primary factors explaining interindividual differences in church attendance. To examine the role of age, we change the metric of time from waves of measurement, as in the previous graph, to biological age. Consult [Metrics](#) report for details on measurement of age.

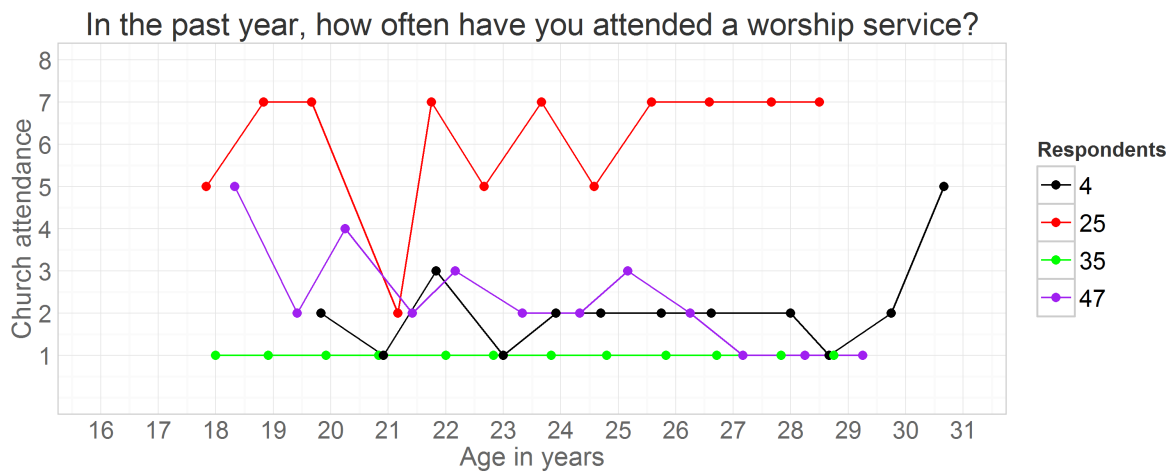
```
ds<- dsL %>% dplyr::filter(id %in% c(4,25,35,47),year %in% c(2000:2011)) %>%
  dplyr::select(idF,byear,bmonth,year,ageyear,agemon) %>%
  dplyr::mutate(time=year-2000, age=agemon/12)
print(ds[ds$idF==25,])
```

	idF	byear	bmonth	year	ageyear	agemon	time	age
13	25	1983	3	2000	17	214	0	17.83
14	25	1983	3	2001	18	226	1	18.83
15	25	1983	3	2002	19	236	2	19.67
16	25	1983	3	2003	21	254	3	21.17
17	25	1983	3	2004	21	261	4	21.75
18	25	1983	3	2005	22	272	5	22.67
19	25	1983	3	2006	23	284	6	23.67
20	25	1983	3	2007	24	295	7	24.58
21	25	1983	3	2008	25	307	8	25.58
22	25	1983	3	2009	26	319	9	26.58
23	25	1983	3	2010	27	332	10	27.67
24	25	1983	3	2011	28	342	11	28.50

## 2.2 Attendance over ages

Plotting individual trajectories, with age as the metric of time.





### 3 Read more

in `./Models/Descriptives`:

- [Metrics](#) - how values of items are labeled
- [Descriptives](#) - basic stats of various items
- [Attendance](#) - focus on church attendance over time
- [Databox](#)

See also

- [Deriving Data from NLYS97 extract](#)
- [Data Manipulation Guide](#)