

lm() in mutate()

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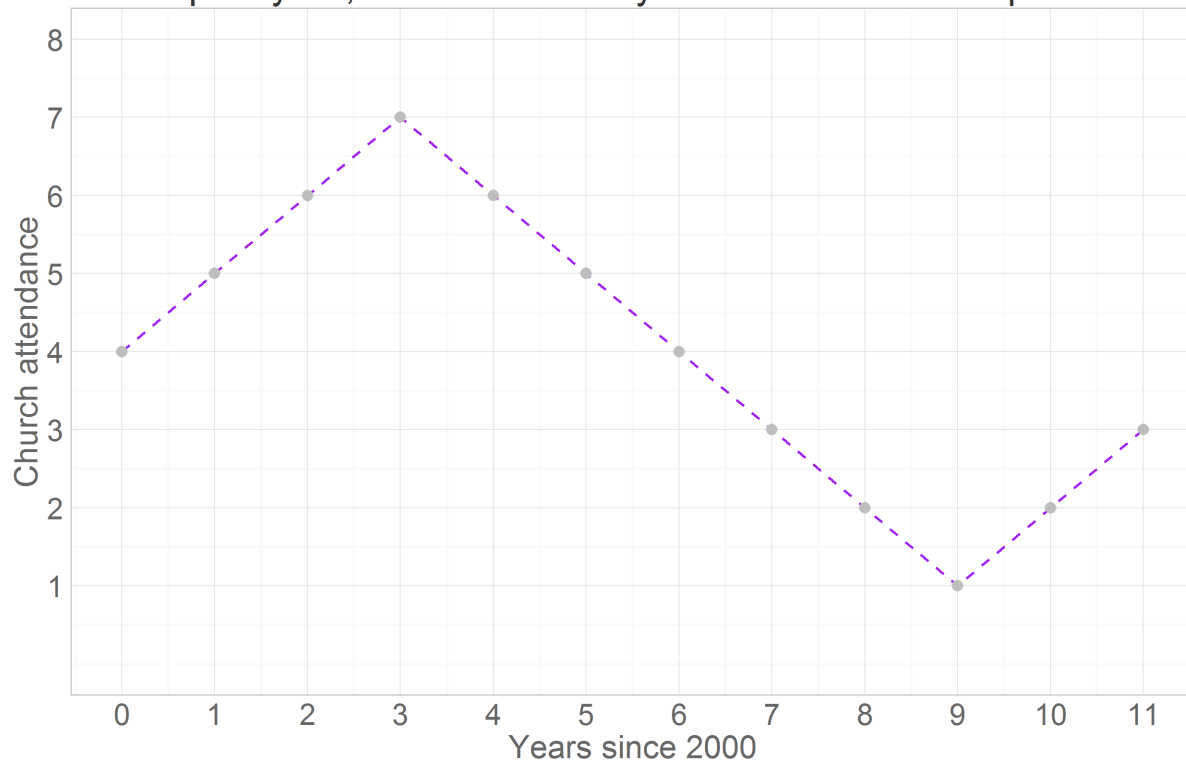
Contents

Data for a single person

```
ds<- dsL %>% dplyr::filter(id==1,year %in% c(2000:2011)) %>% dplyr::select(id,year,attend) %>%  
  mutate(time=year-2000)  
print(ds)
```

	obs	id	year	attend	time
1	1	47	2000	4	0
2	2	47	2001	5	1
3	3	47	2002	6	2
4	4	47	2003	7	3
5	5	47	2004	6	4
6	6	47	2005	5	5
7	7	47	2006	4	6
8	8	47	2007	3	7
9	9	47	2008	2	8
10	10	47	2009	1	9
11	11	47	2010	2	10
12	12	47	2011	3	11

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



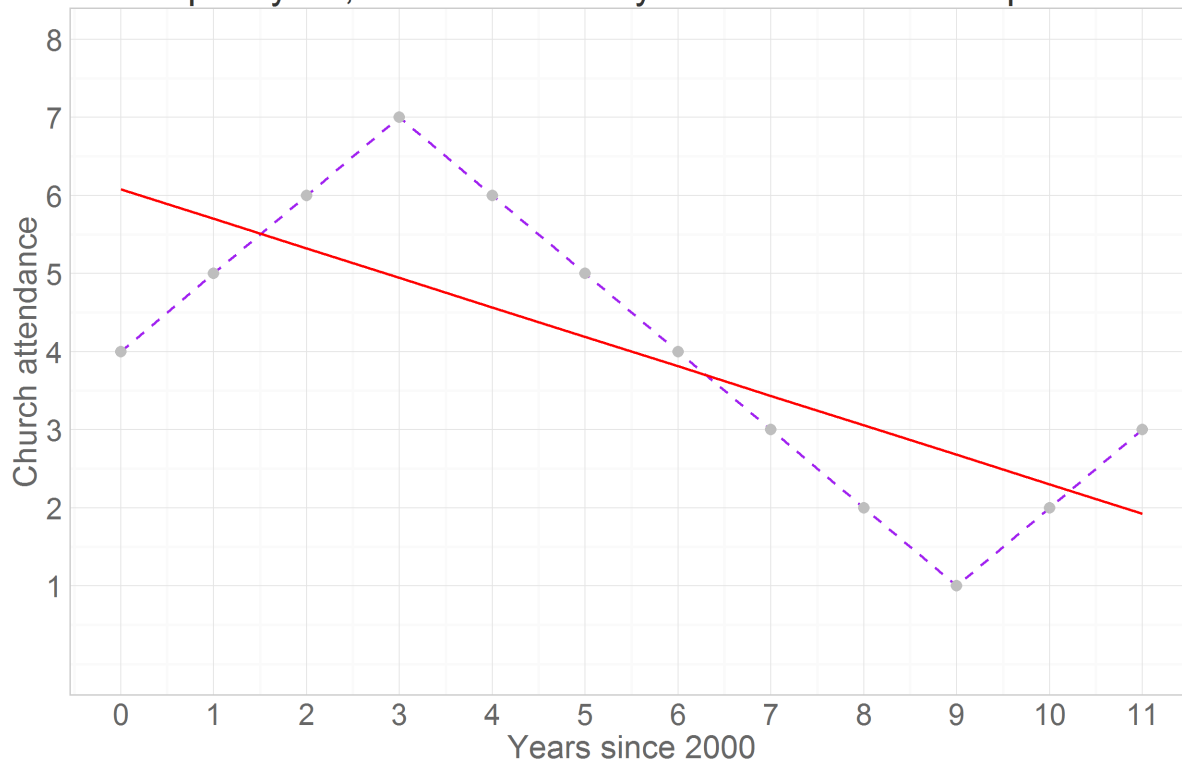
add a straight line to represent possible prediction line, in this case a straight line

```
linear<- predict(lm(attend ~ time, ds))
ds<- ds %>% dplyr::mutate(linear=linear)
print(ds)
```

	obs	id	year	attend	time	linear
1	1	47	2000	4	0	6.077
2	2	47	2001	5	1	5.699
3	3	47	2002	6	2	5.322
4	4	47	2003	7	3	4.944
5	5	47	2004	6	4	4.566
6	6	47	2005	5	5	4.189
7	7	47	2006	4	6	3.811
8	8	47	2007	3	7	3.434
9	9	47	2008	2	8	3.056
10	10	47	2009	1	9	2.678
11	11	47	2010	2	10	2.301
12	12	47	2011	3	11	1.923

```
p<-p+ geom_line(aes(y=linear),color="red", size=.5)
p
```

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



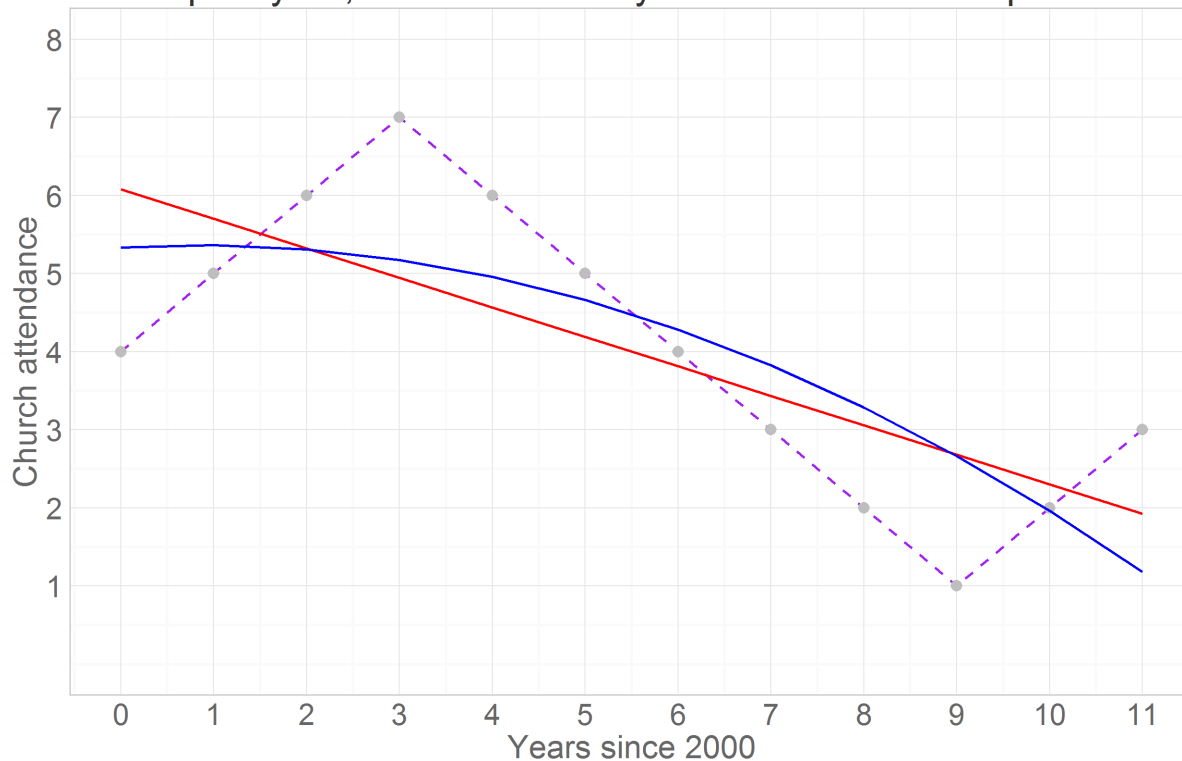
Or adding the curvature the quadratic term

```
quadratic<- predict(lm(attend ~ poly(time,2),ds))
ds<- ds %>% mutate(quadratic=quadratic)
print(ds)
```

	obs	id	year	attend	time	linear	quadratic
1	1	47	2000	4	0	6.077	5.335
2	2	47	2001	5	1	5.699	5.362
3	3	47	2002	6	2	5.322	5.308
4	4	47	2003	7	3	4.944	5.173
5	5	47	2004	6	4	4.566	4.958
6	6	47	2005	5	5	4.189	4.661
7	7	47	2006	4	6	3.811	4.283
8	8	47	2007	3	7	3.434	3.825
9	9	47	2008	2	8	3.056	3.285
10	10	47	2009	1	9	2.678	2.665
11	11	47	2010	2	10	2.301	1.964
12	12	47	2011	3	11	1.923	1.181

```
p<-p+ geom_line(aes(y=quadratic),color="blue", size=.5)
p
```

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



```
# p<-p+ geom_line(aes(y=cubic),color="green", size=.5)
```

or the cubic term

```
cubic<- predict(lm(attend ~ poly(time,3),ds))
ds<- ds %>% mutate( cubic=cubic)
print(ds)
```

	obs	id	year	attend	time	linear	quadratic	cubic
1	1	47	2000	4	0	6.077	5.335	3.604
2	2	47	2001	5	1	5.699	5.362	5.519
3	3	47	2002	6	2	5.322	5.308	6.410
4	4	47	2003	7	3	4.944	5.173	6.485
5	5	47	2004	6	4	4.566	4.958	5.954
6	6	47	2005	5	5	4.189	4.661	5.028
7	7	47	2006	4	6	3.811	4.283	3.916
8	8	47	2007	3	7	3.434	3.825	2.828
9	9	47	2008	2	8	3.056	3.285	1.974
10	10	47	2009	1	9	2.678	2.665	1.563
11	11	47	2010	2	10	2.301	1.964	1.806
12	12	47	2011	3	11	1.923	1.181	2.912

```
p<-p+ geom_line(aes(y=cubic),color="green", size=.5)
p
```

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

