

# lm() in mutate()

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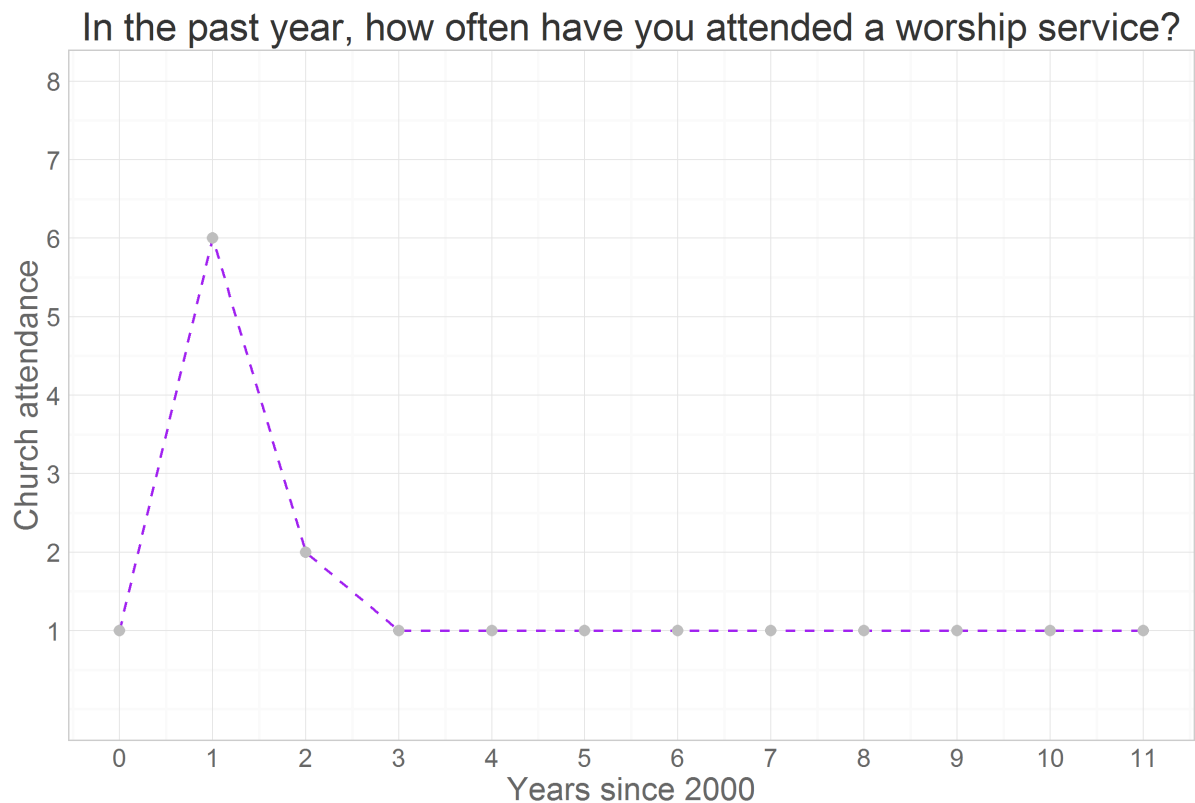
*Tuesday, June 24, 2014*

## 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)
```

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



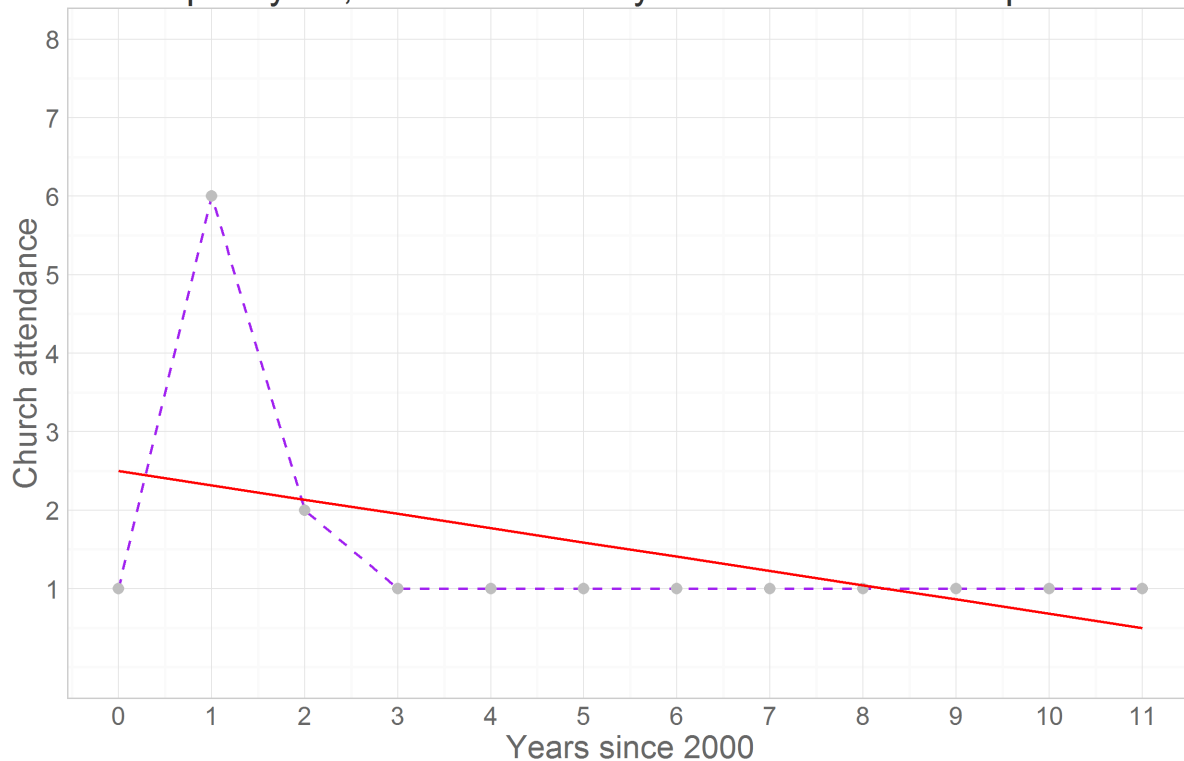
add a straight line to represent possible prediction line, in this case a straight line

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

	id	year	attend	time	linear
1	1	2000	1	0	2.5000
2	1	2001	6	1	2.3182
3	1	2002	2	2	2.1364
4	1	2003	1	3	1.9545
5	1	2004	1	4	1.7727
6	1	2005	1	5	1.5909
7	1	2006	1	6	1.4091
8	1	2007	1	7	1.2273
9	1	2008	1	8	1.0455
10	1	2009	1	9	0.8636
11	1	2010	1	10	0.6818
12	1	2011	1	11	0.5000

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

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



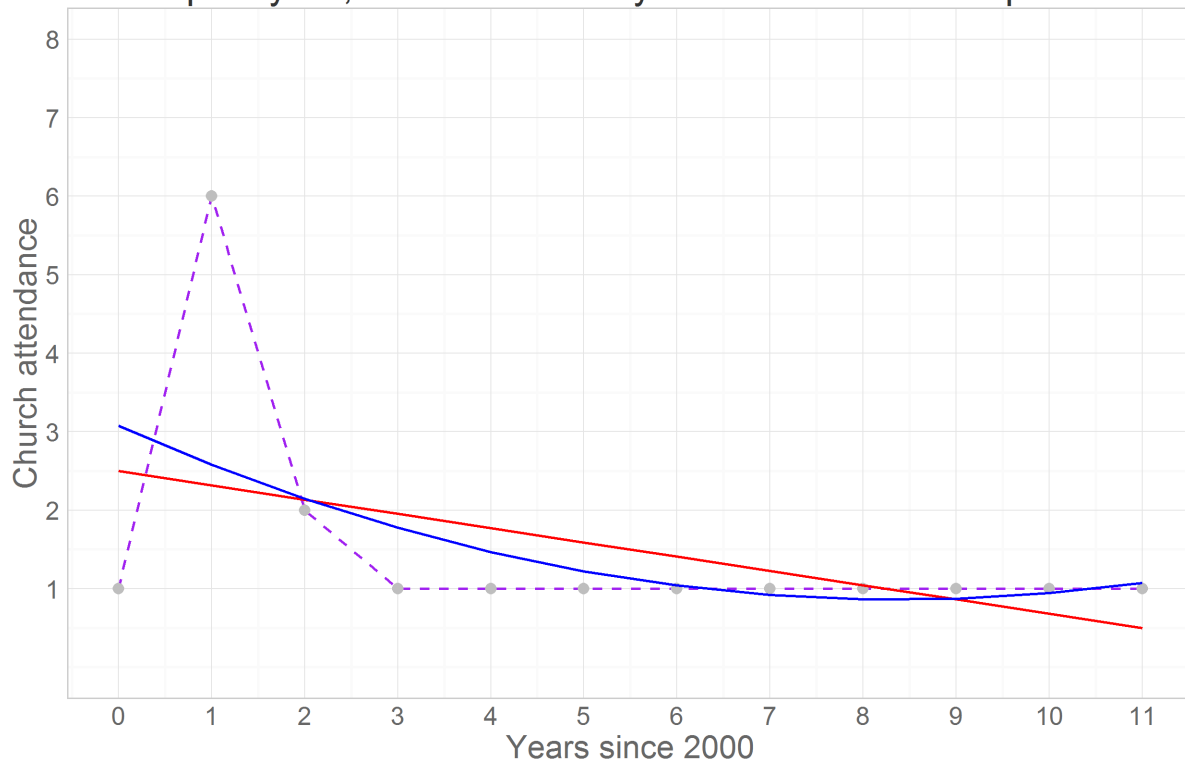
Or adding the curvature the quadratic term

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

	id	year	attend	time	linear	quadratic
1	1	2000	1	0	2.5000	3.0769
2	1	2001	6	1	2.3182	2.5804
3	1	2002	2	2	2.1364	2.1469
4	1	2003	1	3	1.9545	1.7762
5	1	2004	1	4	1.7727	1.4685
6	1	2005	1	5	1.5909	1.2238
7	1	2006	1	6	1.4091	1.0420
8	1	2007	1	7	1.2273	0.9231
9	1	2008	1	8	1.0455	0.8671
10	1	2009	1	9	0.8636	0.8741
11	1	2010	1	10	0.6818	0.9441
12	1	2011	1	11	0.5000	1.0769

```
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)
```

	id	year	attend	time	linear	quadratic	cubic
1	1	2000	1	0	2.5000	3.0769	2.8462
2	1	2001	6	1	2.3182	2.5804	2.6014
3	1	2002	2	2	2.1364	2.1469	2.2937
4	1	2003	1	3	1.9545	1.7762	1.9510
5	1	2004	1	4	1.7727	1.4685	1.6014
6	1	2005	1	5	1.5909	1.2238	1.2727
7	1	2006	1	6	1.4091	1.0420	0.9930
8	1	2007	1	7	1.2273	0.9231	0.7902
9	1	2008	1	8	1.0455	0.8671	0.6923
10	1	2009	1	9	0.8636	0.8741	0.7273
11	1	2010	1	10	0.6818	0.9441	0.9231
12	1	2011	1	11	0.5000	1.0769	1.3077

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

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

