

# Productivity vs Hourly Compensation : ggplot

coop711

2017-05-19

## ggplots

### Data Reshaping

```
library(reshape2)
prod.wage.melt <- melt(prod.wage, id.vars = "Year", measure.variables = c("Hourly_compensation", "Net_productivity"), variable.name = "Prod.or.Compensation", value.name = "Cumulative.Changes")
prod.wage.2.melt <- melt(prod.wage.2, id.vars = "Year", measure.variables = c("Real_median_hourly_compensation", "Real_average_hourly_compensation", "Net_productivity"), variable.name = "Prod.or.Compensation", value.name = "Cumulative.Changes")
str(prod.wage.melt)
```

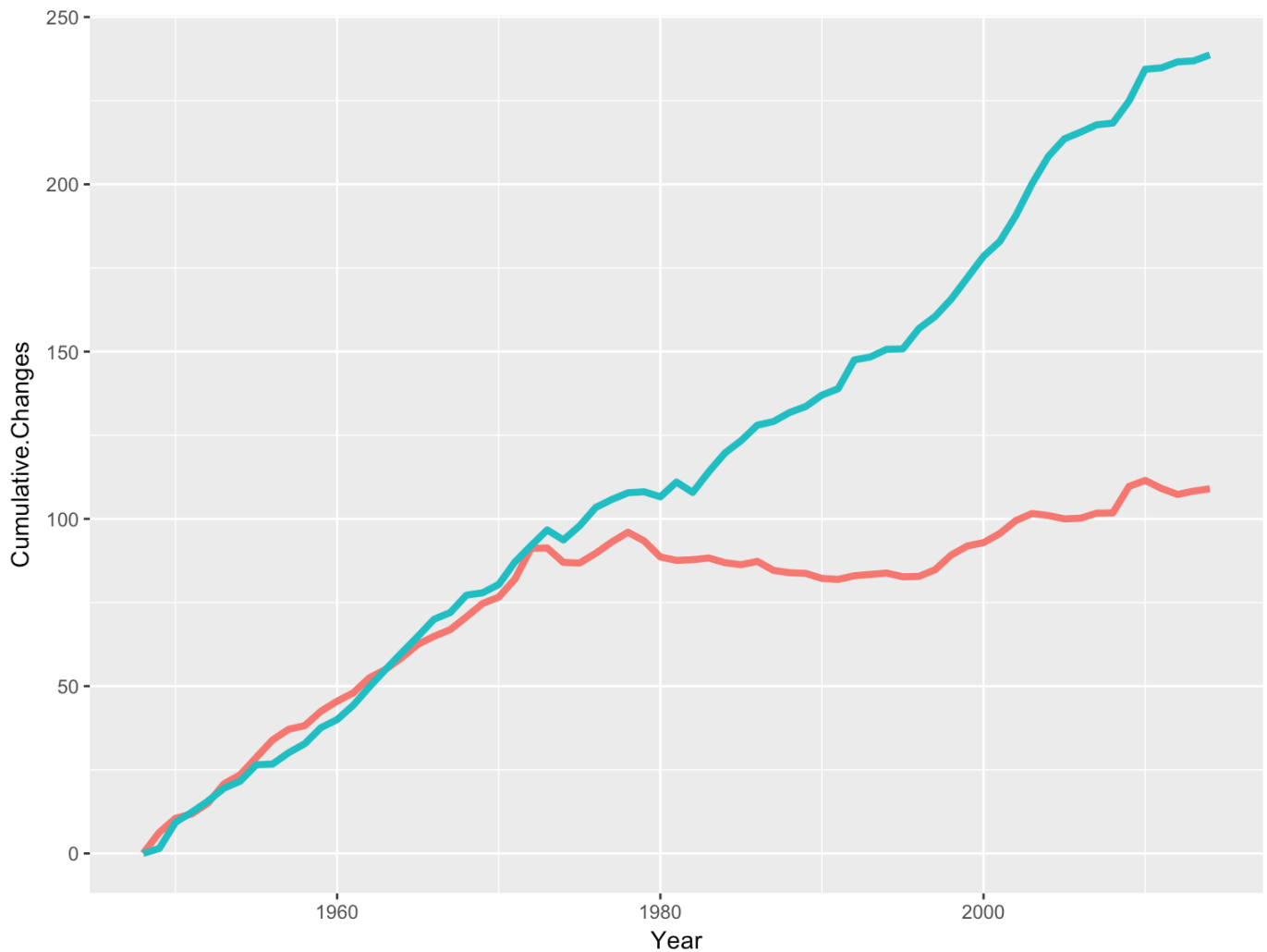
```
## 'data.frame':   134 obs. of  3 variables:
##  $ Year          : int   1948 1949 1950 1951 1952 1953 1954 1955 1956 1957
##  ...
##  $ Prod.or.Compensation: Factor w/ 2 levels "Hourly_compensation",...: 1 1 1 1 1 1 1 1 1 1 ...
##  $ Cumulative.Changes  : num   0 6.3 10.5 11.8 15 20.8 23.5 28.7 33.9 37.1 ...
```

```
str(prod.wage.2.melt)
```

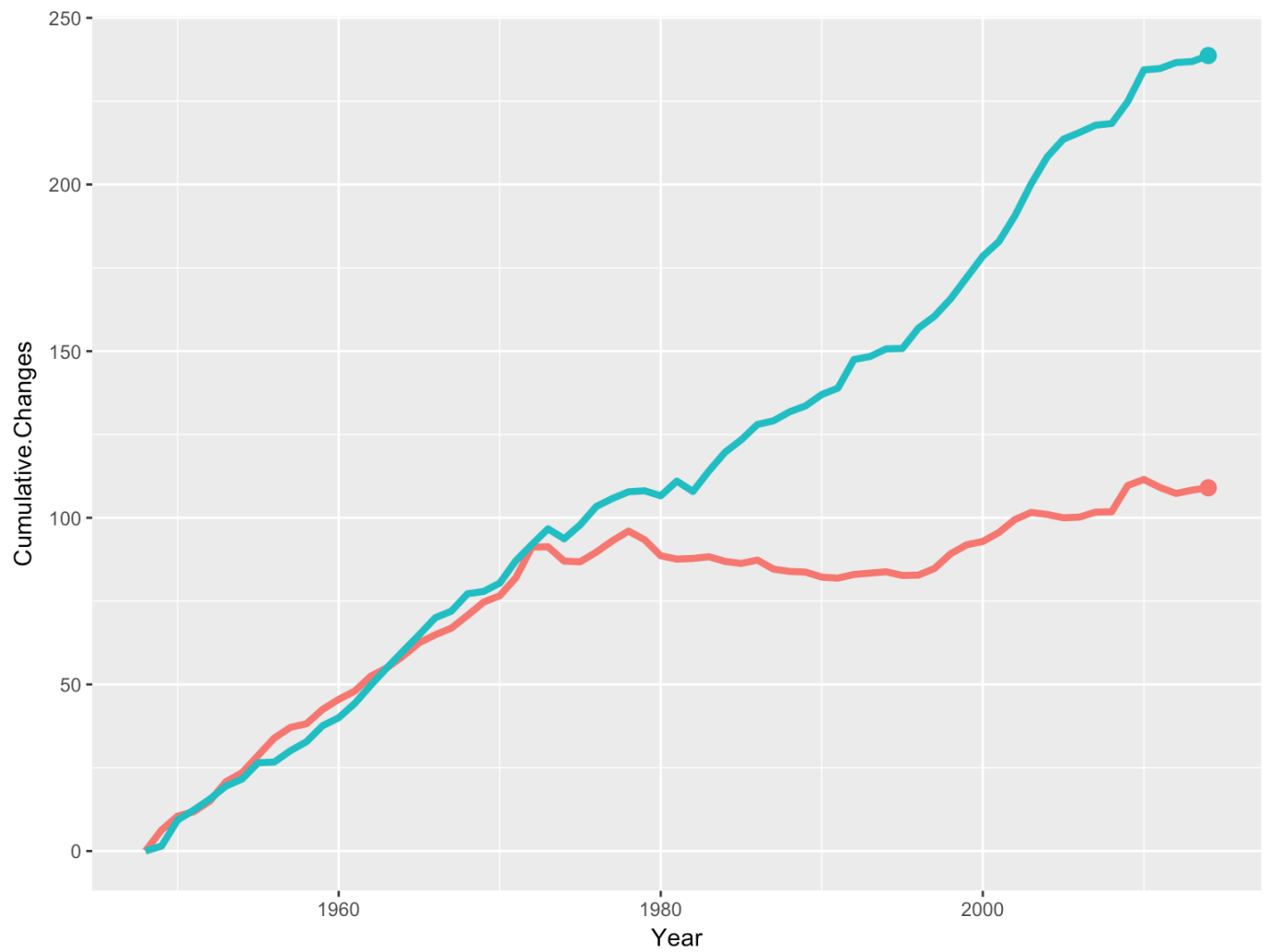
```
## 'data.frame':   126 obs. of  3 variables:
##  $ Year          : int   1973 1974 1975 1976 1977 1978 1979 1980 1981 1982
##  ...
##  $ Prod.or.Compensation: Factor w/ 3 levels "Real_median_hourly_compensation",...: 1 1 1 1 1 1 1 1 1 1 ...
##  $ Cumulative.Changes  : num   0 -2 -0.5 0.4 1.3 2.5 1.9 1.1 -1.2 0.5 ...
```

# Net Productivity and Hourly Compensation

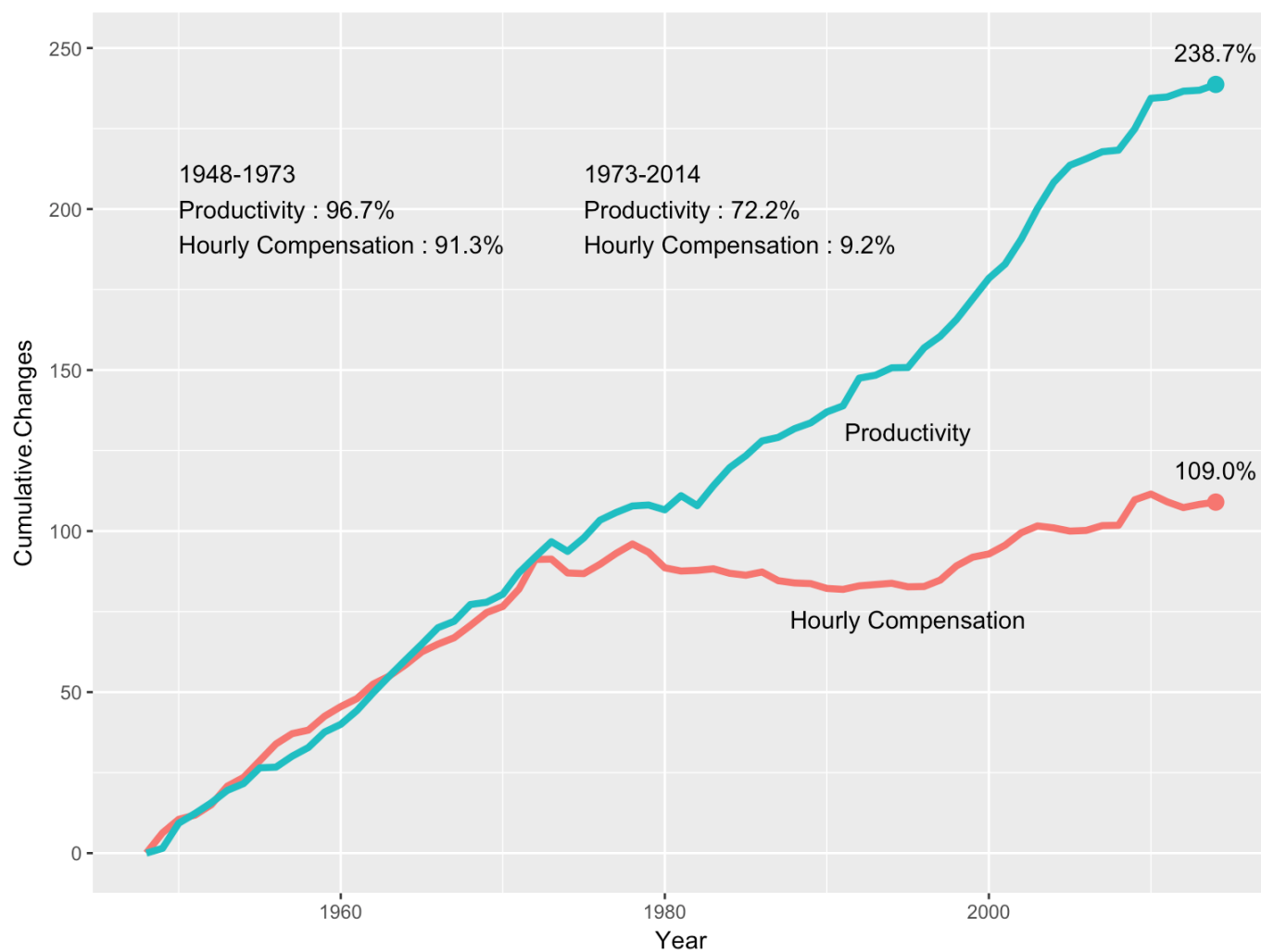
```
library(ggplot2)
par(family = "HCR Dotum LVT")
main.title <- "Productivity and Compensation (1948-2014)"
x.lab <- "Year"
y.lab <- "Cumulative Changes since 1948 (%)"
var.lab <- c("Hourly Compensation", "Productivity")
legend.lab <- c("1948-1973\nProductivity : 96.7%\nHourly Compensation : 91.3%", "1973-2014\nProductivity : 72.2%\nHourly Compensation : 9.2%")
end.df <- subset(prod.wage.melt, Year == 2014)
y1995.df <- subset(prod.wage.melt, Year == 1995)
text.lab <- paste(format(end.df$Cumulative.Changes, digits = 1, nsmall = 1), "%", sep = "")
(g1 <- ggplot() +
  geom_line(data = prod.wage.melt, aes(x = Year,
                                       y = Cumulative.Changes,
                                       colour = Prod.or.Compensation),
            size = 1.5,
            show.legend = FALSE))
```



```
(g2 <- g1 +
  geom_point(data = end.df, aes(x = Year,
                                y = Cumulative.Changes,
                                colour = Prod.or.Compensation),
    size = 3,
    show.legend = FALSE))
```

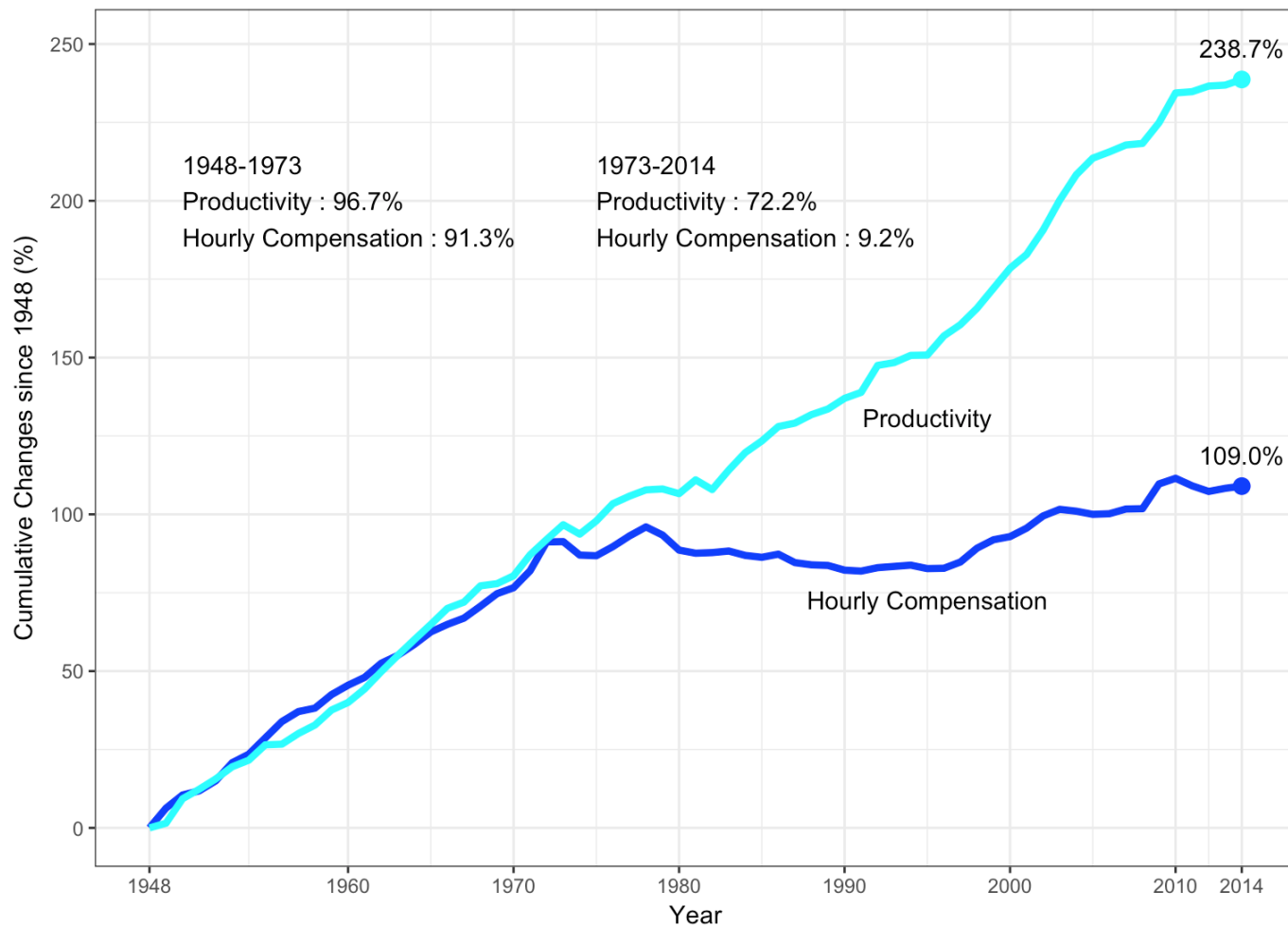


```
(g3 <- g2 +
  geom_text(data = y1995.df, aes(x = Year,
    y = Cumulative.Changes - c(10, 20),
    label = var.lab)) +
  geom_text(data = end.df, aes(x = Year,
    y = Cumulative.Changes + 10,
    label = text.lab)) +
  annotate("text",
    x = c(1950, 1975),
    y = 200,
    label = legend.lab,
    hjust = 0))
```



```
(g4 <- g3 +
  scale_colour_manual(values = c("blue", "cyan")) +
  scale_x_continuous(breaks = c(1948, seq(1960, 2010, by = 10), 2014),
    labels = c(1948, seq(1960, 2010, by = 10), 2014)) +
  labs(title = main.title, x = x.lab, y = y.lab) +
  theme_bw())
```

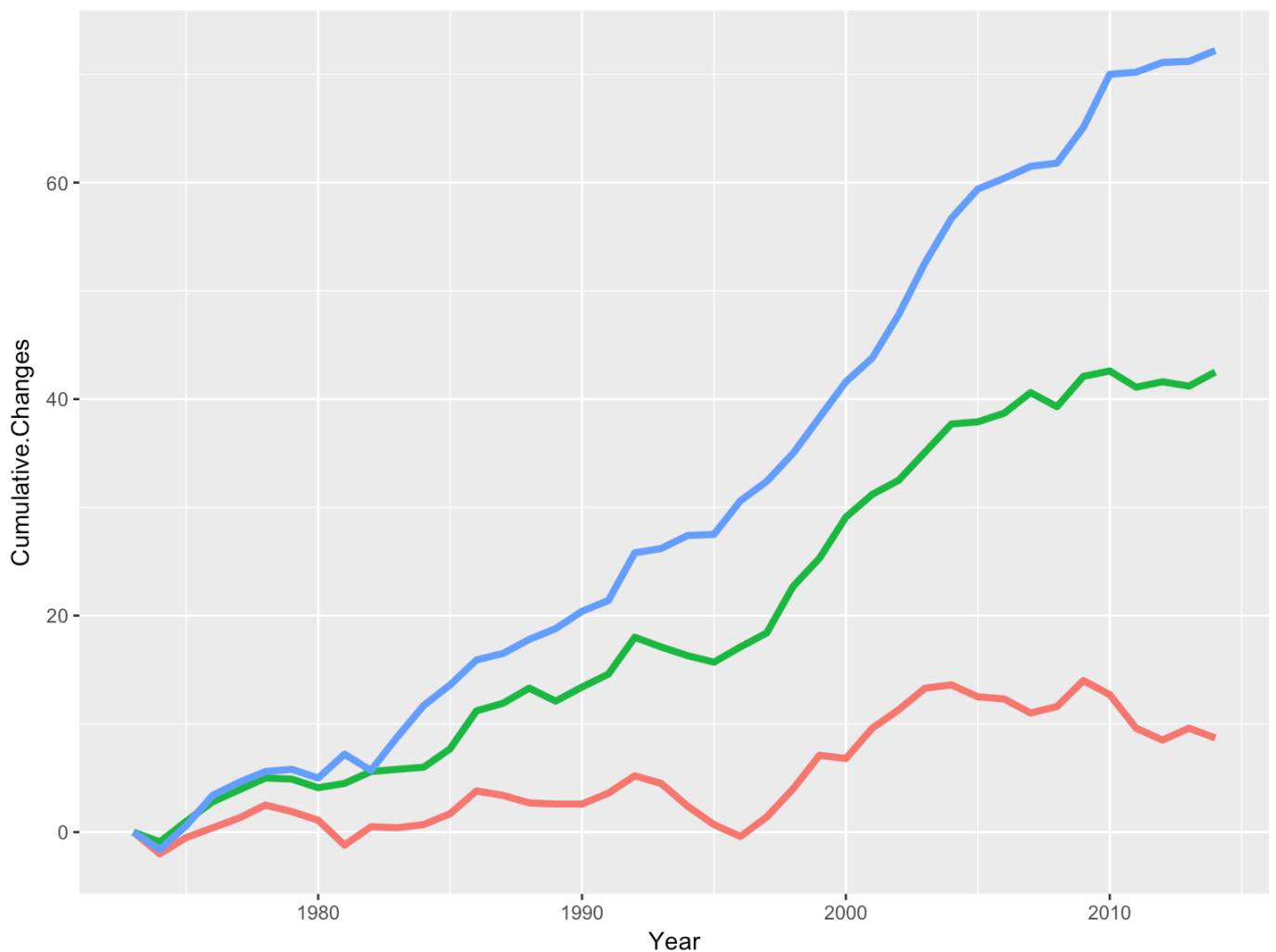
Productivity and Compensation (1948-2014)



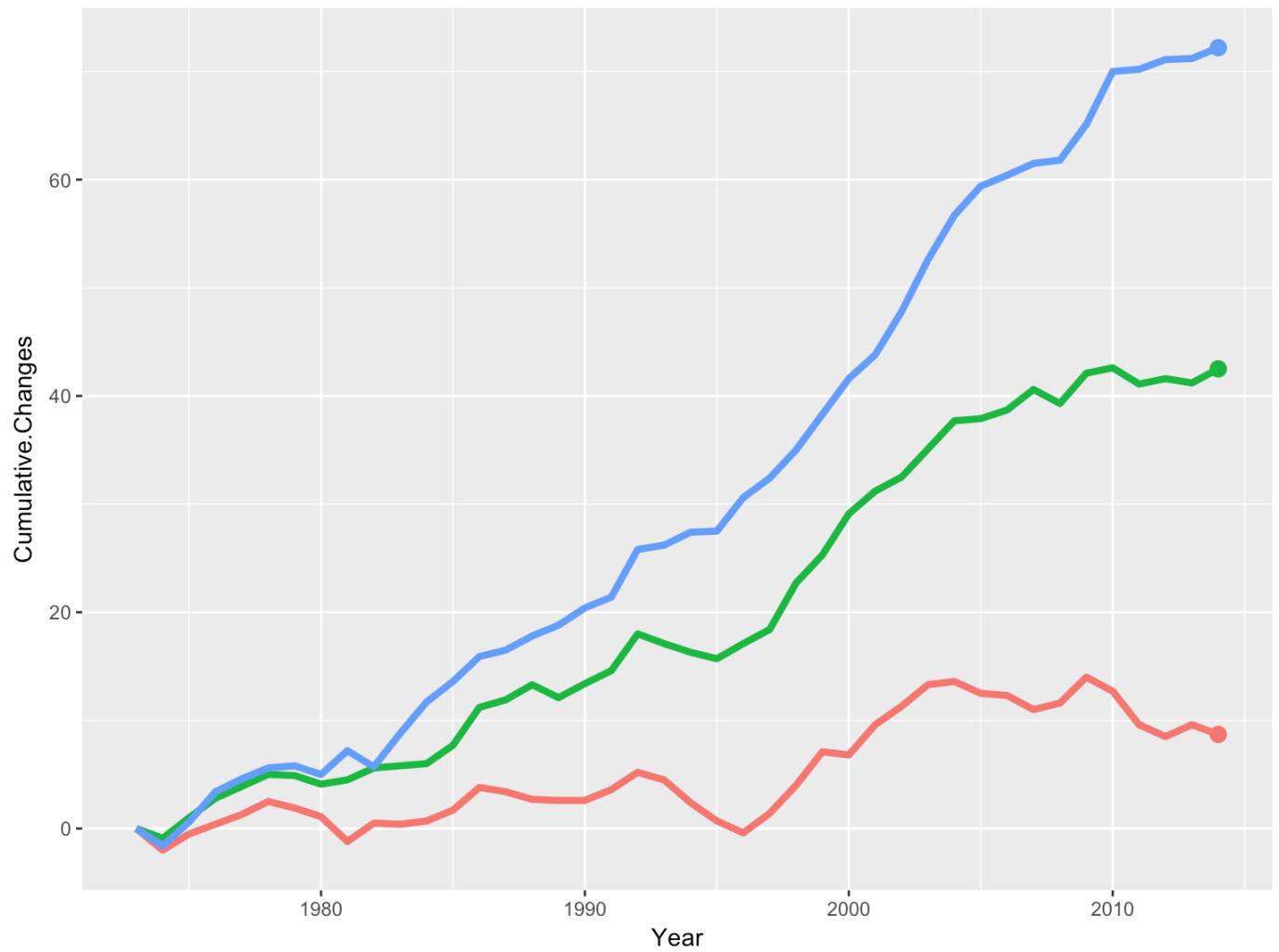
```
ggsave("../pics/Productivity_vs_Wages_ggplot.png", width = 8, height = 6)
```

# Net Productivity vs Average and Median Hourly Compensation

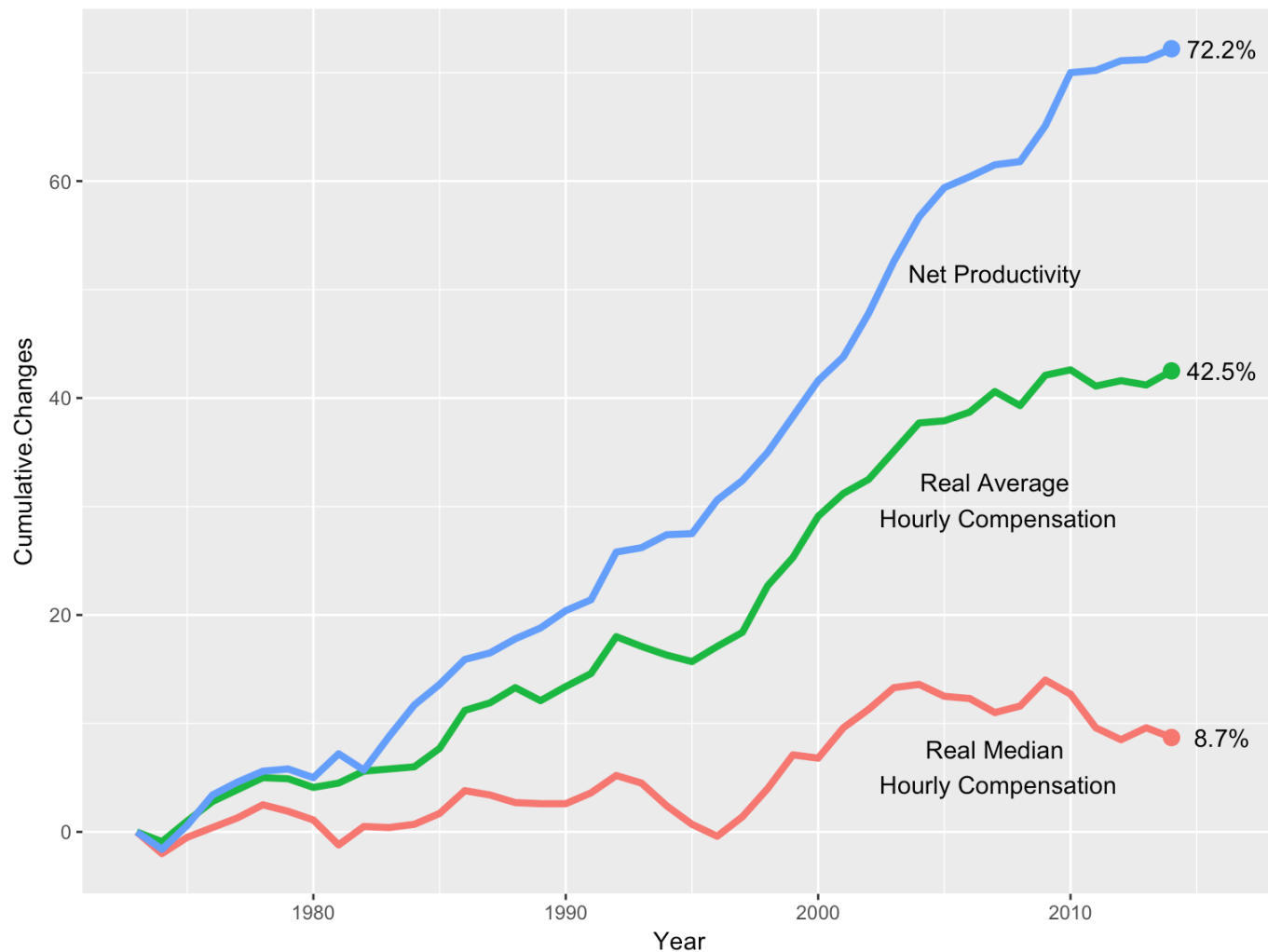
```
par(family = "HCR Dotum LVT")
main.title.2 <- "Net Productivity, Average and Median Compensation (1973-2014)"
y.lab.2 <- "Cumulative Changes since 1973 (%)"
var.lab.2 <- c("Real Median\n Hourly Compensation", "Real Average\n Hourly Compensation", "Net Productivity")
end.df.2 <- subset(prod.wage.2.melt, Year == 2014)
y2007.df <- subset(prod.wage.2.melt, Year == 2007)
(h1 <- ggplot() +
  geom_line(data = prod.wage.2.melt, aes(x = Year,
                                         y = Cumulative.Changes,
                                         colour = Prod.or.Compensation),
            size = 1.5,
            show.legend = FALSE))
```



```
(h2 <- h1 +
  geom_point(data = end.df.2, aes(x = Year,
    y = Cumulative.Changes,
    colour = Prod.or.Compensation),
    size = 3,
    show.legend = FALSE))
```



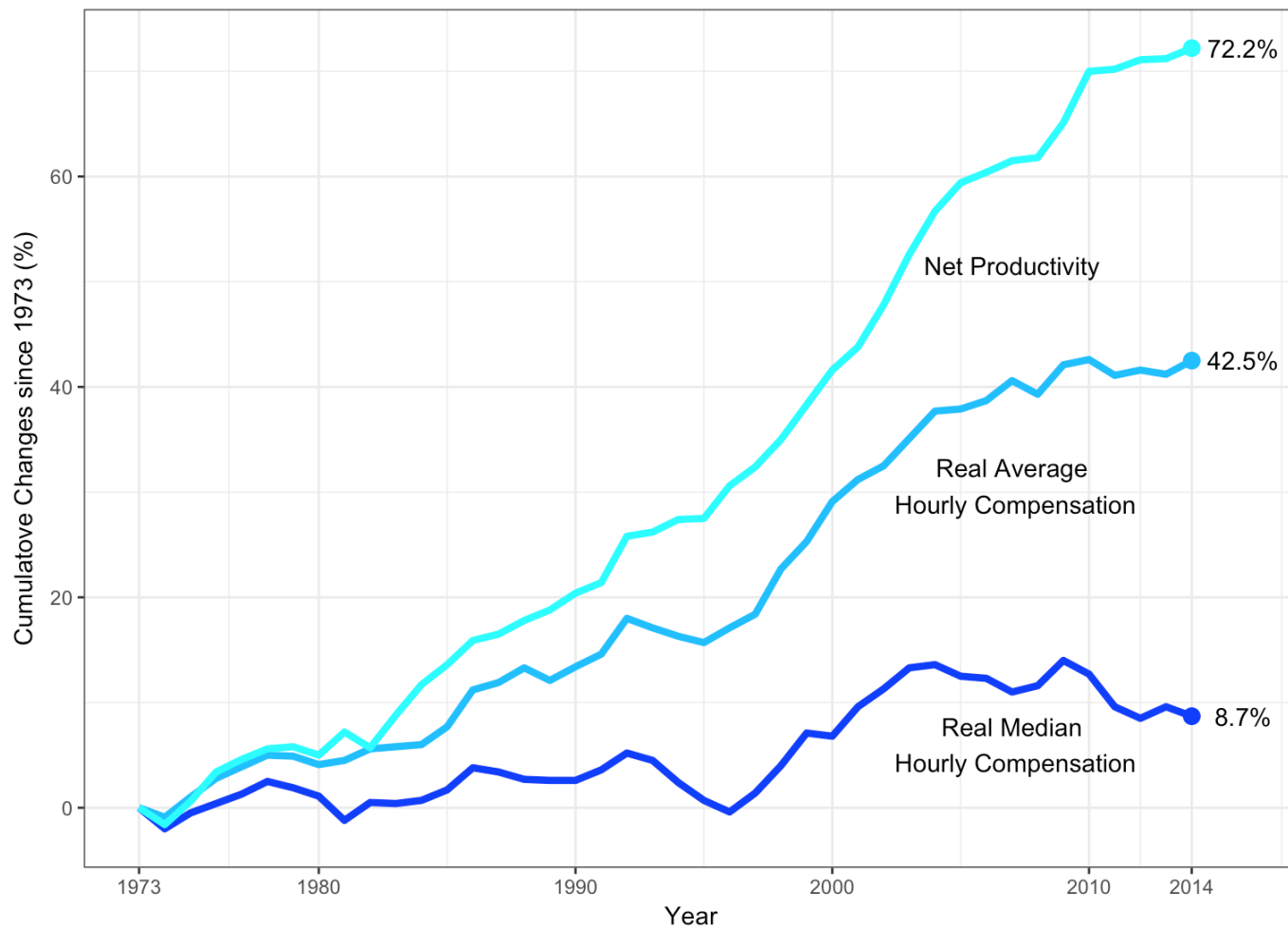
```
(h3 <- h2 +
  geom_text(data = y2007.df, aes(x = Year,
    y = Cumulative.Changes - c(5, 10, 10),
    label = var.lab.2)) +
  geom_text(data = end.df.2, aes(x = Year + 2,
    y = Cumulative.Changes,
    label = paste(Cumulative.Changes, "%", sep = ""))))
```





```
(h4 <- h3 +
  scale_colour_manual(values = c("blue", "deepskyblue", "cyan")) +
  scale_x_continuous(breaks = c(1973, seq(1980, 2010, by = 10), 2014),
    labels = c(1973, seq(1980, 2010, by = 10), 2014)) +
  labs(title = main.title.2, x = x.lab, y = y.lab.2) +
  theme_bw())
```

Net Productivity, Average and Median Compensation (1973-2014)



```
ggsave("../pics/Productivity_vs_Wages.2_ggplot.png", width = 8, height = 6)
```