Eras in baseball: Change point analysis fun title.

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Abstract

Baseball is some weird and wild shit.

Keywords: change point analysis, baseball,

1 Introduction

Berry, Reese, and Larkey (1999) they talk about bridging eras.

When did the steroids era start: https://www.espn.com/mlb/topics/_/page/the-steroids-era#:~:text=Unlike%20other%20MLB%20%22eras%2C%22,leaguewide%20PED%20testing%20until%202003.

Traditional wisdom: 1900-1919 dead ball era

From Woltring: "Baseball has endured much change over the course of its history, and because of constant change, the modern era of baseball has been segmented into six distinct sub-eras. A common list presented at Baseball-Reference described the eras as the Dead Ball Era (1901-1919), the Live Ball Era (1920-1941), the Integration Era (1942-1960), the Expansion Era (1961-1976), the Free Agency Era (1977-1993) and the Long Ball/Steroid Era (1994-2005) (17). This study runs through the 2011 season and a seventh era will be added and labeled the Post Steroid Era (2006-2011)"

https://www.baseball-reference.com/bullpen/Deadball_Era 1901-1920

Mound was lowered in december 1968.
https://www.baseball-reference.com/bullpen/Pitcher%27s_mound

https://www.espn.com/mlb/story/_/id/33238595/major-league-baseball-stops-testing-players-steroids-nearly-20-years-report-says

2 Methods

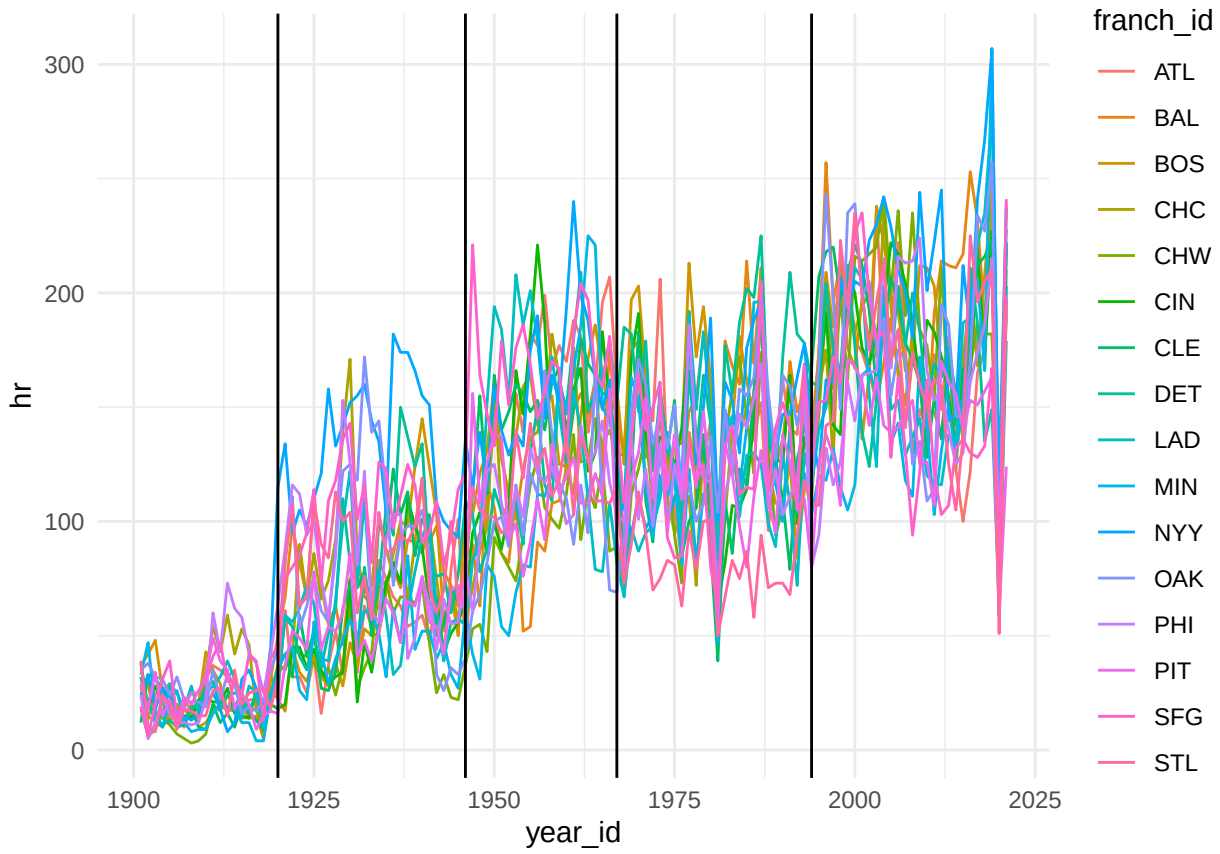
H. Cho and Fryzlewicz (2014) and H. Cho (2016)

R Pacakge: Haeran Cho and Fryzlewicz (2018)

3 Results

```
## [1] 20 46 67 94
```

```
##  b
## 48
```



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Supplementary Material

All code for reproducing the analyses in this paper is publicly available at https://github.com/menawhalen/baseball_cpt

References

Berry, Scott M., C. Shane Reese, and Patrick D. Larkey. 1999. "Bridging Different Eras in Sports." *Journal of the American Statistical Association* 94 (447): 661–76. https://doi.org/10.1080/01621459.1999.10474163.

Cho, H. 2016. "Change-Point Detection in Panel Data via Double CUSUM Statistic." *Electronic Journal of Statistics* 10: 2000–2038.

Cho, Haeran, and Piotr Fryzlewicz. 2018. *Hdbinseg: Change-Point Analysis of High-Dimensional Time Series via Binary Segmentation*. https://CRAN.R-project.org/packag

e=hdbinseg.

Cho, H., and P. Fryzlewicz. 2014. "Multiple-Change-Point Detection for High Dimensional Time Series via Sparsified Binary Segmentation." *JRSSB* 77: 475–507.