
# The rise and fall of the Chaos report figures

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# *Introduction*

- Ph.D. student at VU University Amsterdam.
- Research about quality of IT forecasts.
- Part of research is about project success figures.
  - Accepted for publication in IEEE Software.

# Introduction

- In 1994, Standish Group published figures on project success in their Chaos reports.
  - They found software developments projects were 16% successful, 53% were challenged and 31% failed outright.
- The figures have had enormous impact.
- But are these figures accurate and reliable?

# *Research results*

- Standish definitions for successful and challenged projects have four problems:
  - Term project success is misleading since it is solely about estimation accuracy.
  - Definitions encourage estimation inaccuracies.
  - They lead to unrealistically low success rates.
  - Definitions allow for politically biased figures.

- Conclusion: Standish success rates are meaningless for benchmarking.

# *Standish definitions*

EXQUITY
"exploring quantifiable IT yields"

- Standish assessed projects using the following definitions.
  - Project success: the project is completed on-time and on-budget, with all features and functions as initially specified.
  - Project challenged: the project is completed and operational but over-budget, over the time estimate, and offers fewer features and functions than originally specified.

# *Standish figures*

- Using these definitions Standish derived success rates.

| Standish rapport | Project success | Project challenged | Project failure |
|---|---|---|---|
| 1994 | 16% | 53% | 31% |
| 1996 | 27% | 33% | 40% |
| 1998 | 26% | 46% | 28% |
| 2000 | 28% | 49% | 23% |
| 2004 | 29% | 53% | 18% |

# *Problem 1: misleading*

EXQUITY
"exploring quantifiable IT yields"

- These definitions compare the initial forecasts to the actual outcome.
  - All about estimation accuracy of cost, time and functionality.
- Only forecasts of cost, duration and functionality count.
  - They do not consider, for example, usefulness, value or user satisfaction.
- Still, Standish named it project success, suggesting much more than estimation accuracy.

# *Problem 2: encourages inaccuracies*

EQUITY
"exploring quantifiable IT yields"

- To assess the figures, we have to take closer look at estimation accuracy.
  - What does it mean to be on-time, on-budget and with all features and functions?

- On-time means: actual duration time is shorter than or equal to forecasted duration time.

- But what is the quality of the initial forecasts?

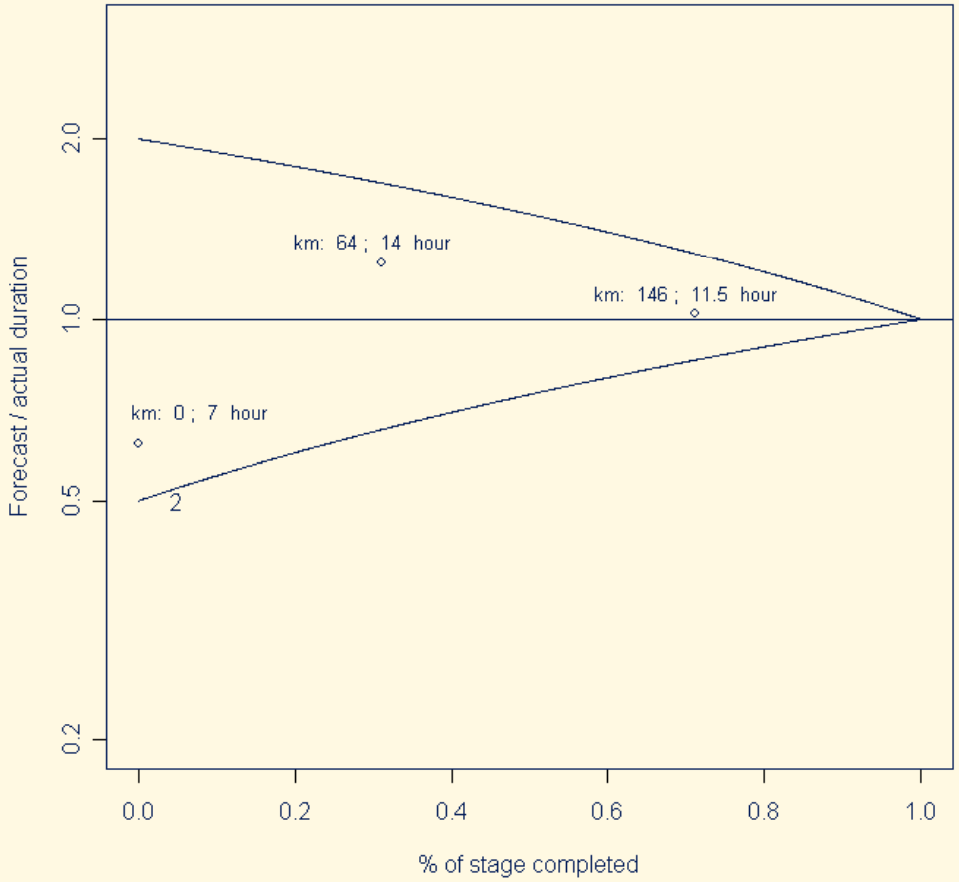
# Cycling: no politics


| Forecast at start: | |
|---|---|
| Used time | 0 hours |
| Estimate of rest | 7 hours |
| Total forecast | 7 hours |

| Forecast after 64 km: | |
|---|---|
| Used time | 3 hours |
| Estimate of rest | 11 hours |
| Total forecast | 14 hours |

| Forecast after 146 km: | |
|---|---|
| Used time | 7 hours |
| Estimate of rest | 4.5 hours |
| Total forecast | 11.5 hours |

# Forecasts: theory



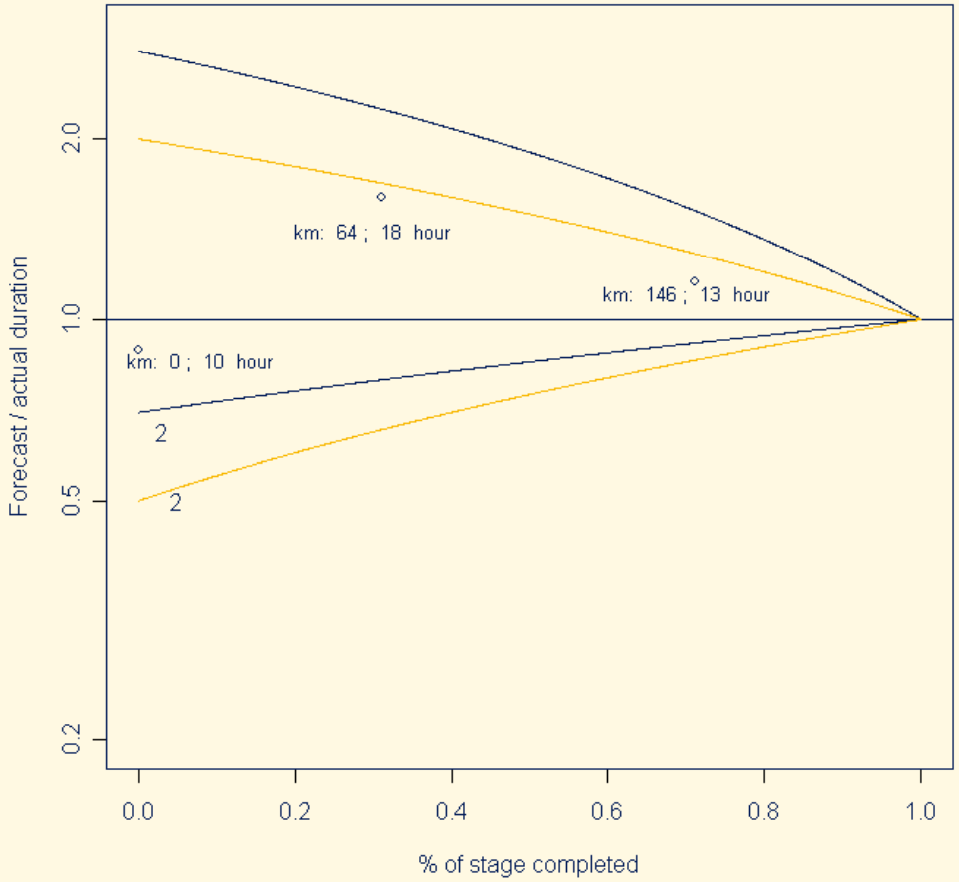

11.25 hours

# Cycling: politics I

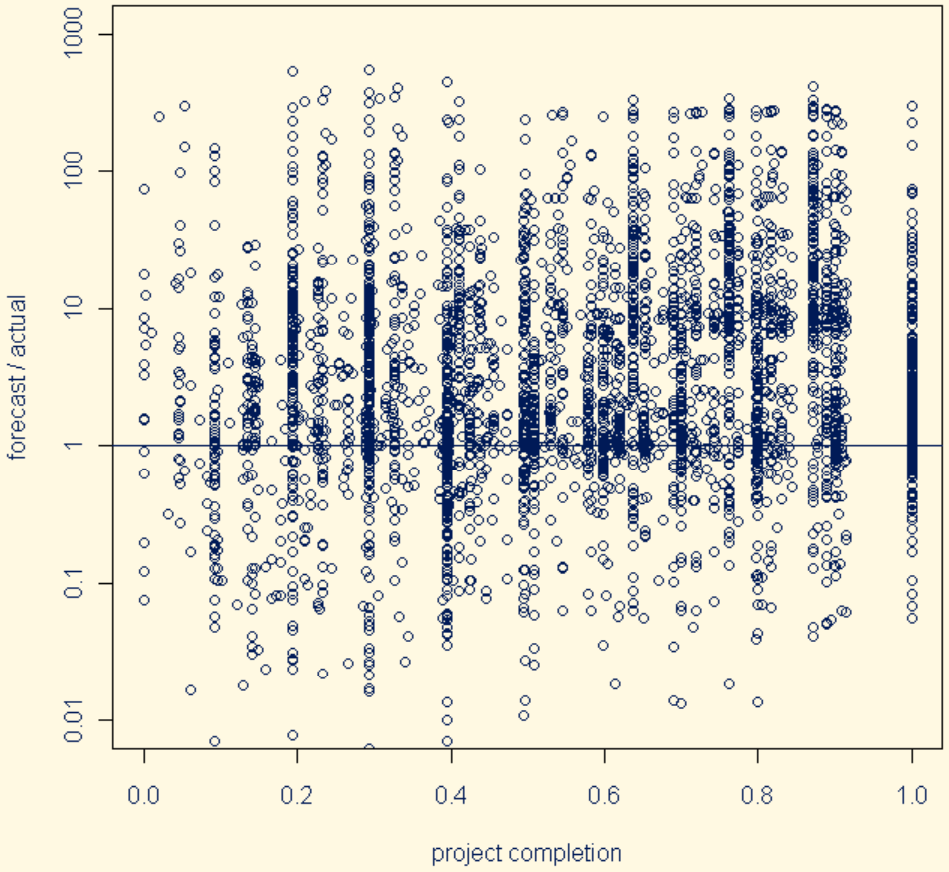
- Partner calls: How long will you be gone?
  - You want to make sure you will make it


| Forecast: | | Forecast after 64km: | | Forecast after 146km: | |
|---|---|---|---|---|---|
| No politics | 7 hours | No politics | 14 hours | No politics | 11.5 hours |
| Politics: maximum | 10 hours | Politics: maximum | 18 hours | Politics: maximum | 13 hours |

# Forecasts: politics I



# Real-world example




Data of 867 software development projects.

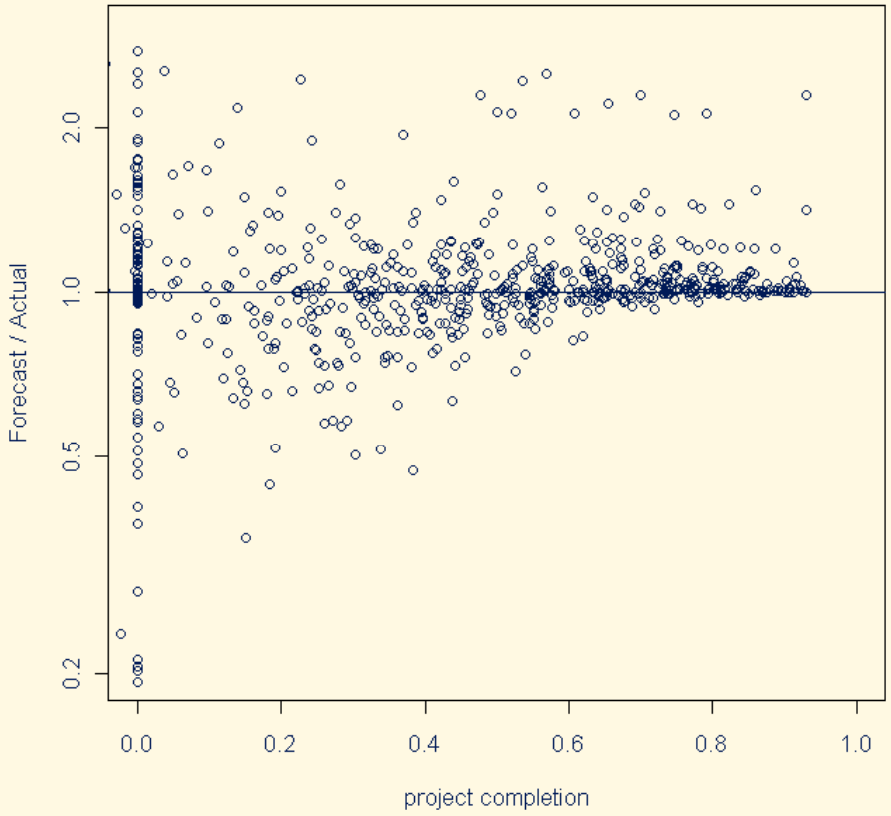
Forecasts of total project cost.

# *Problem 2: encourages inaccuracies*

EQUITY
"exploring quantifiable IT yields"

- Organization has low quality of forecasting.
  - Median deviation to the actual of 233%.
- Standish success rate is 67%.
- Steered on Standish success figures.
  - Project was deemed successful if stayed within budget.
  - Result: Adding large safety margins to insure success.

# Real-world example




Data of 140 software development projects.

Forecasts of total project cost.

# *Problem 3: unrealistic*

EQUITY
"exploring quantifiable IT yields"

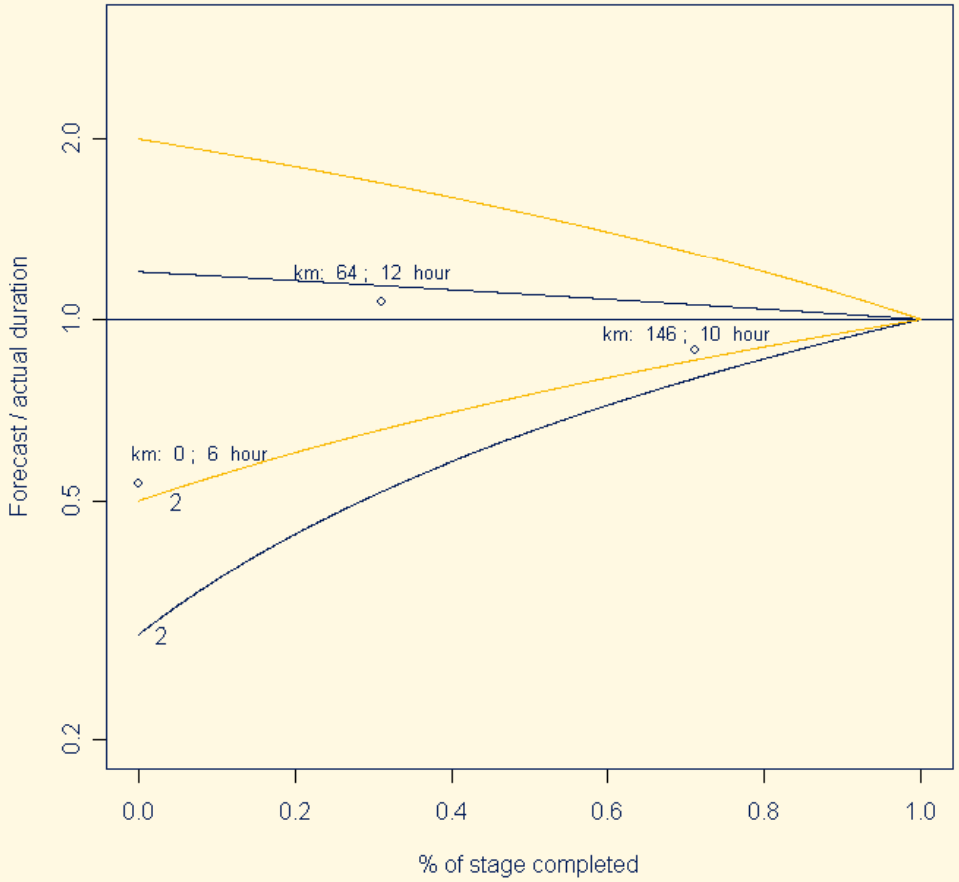
- This organization has relatively good forecasting quality.
  - Forecasts centered around actual value.
  - Median deviation of 12% to the actual.
- However, the Standish success rate is only 59%.
  - Accounting for functionality forecasts results in 35% success rate.

# Cycling: politics II

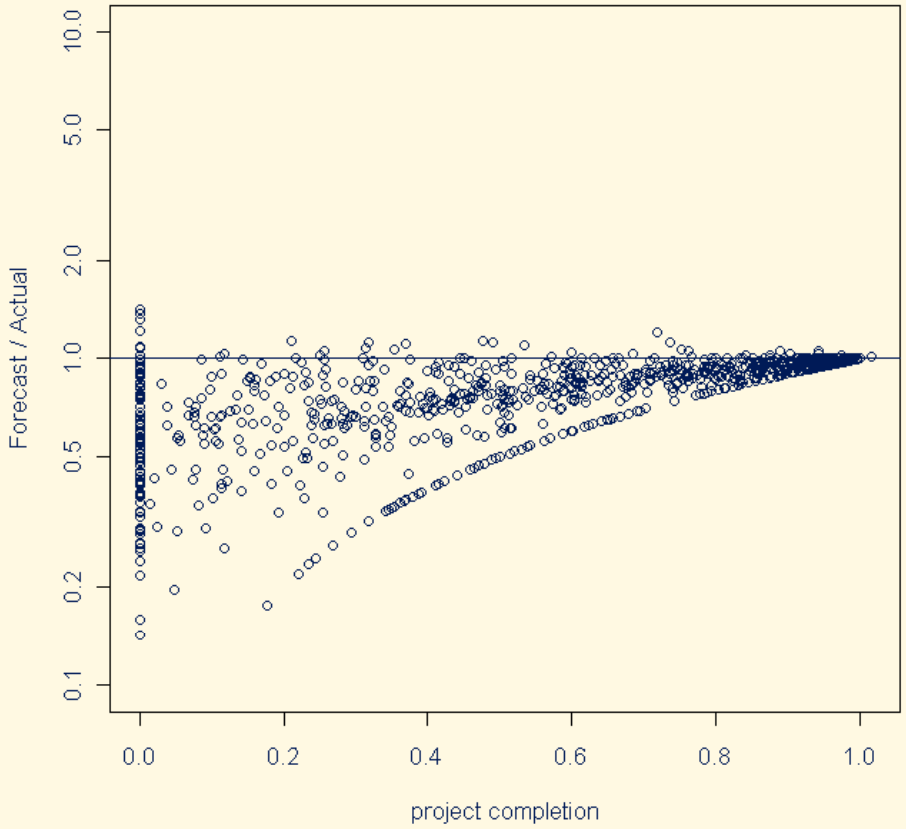
- Partner calls: How long will you be gone?
  - Positive estimation


| Forecast: | | Forecast after 64 km: | | Forecast after 146 km: | |
|---|---|---|---|---|---|
| No politics | 7 hours | No politics | 14 hours | No politics | 11.5 hours |
| Politics: goes well | 6 hours | Politics: goes well | 12 hours | Politics: goes well | 10.5 hours |

# Forecasts: politics II



# Real-world example




Data of 121 software development projects.

Forecasts of total project duration.

# *Problem 4: allows for political biases*

EXQUITY
"exploring quantifiable IT yields"

- Forecasts are biased, but do not have large deviations.
  - Median deviation of 21% to actual.
- Standish success rate is only 5.8%.
  - Low compared to the other organizations.
- Bias of forecasts in organization highly influential for outcome Standish figures.

# Conclusions

- Standish Chaos definitions are misleading.
  - They are solely about estimation accuracy of cost, duration and functionality.
- Using the definitions encourages inaccuracies.
  - Found deviations of 233% to the actual that are considered highly successful with 67%.
- They lead to unrealistically low rates.
  - Organization with 12% deviation is only 59% successful.

# Conclusions

- The resulting figures are meaningless as they allow for biases.
  - No information about the politics involved in organizations Standish considered.
  - Averaging biased figures is meaningless.
- Successful and challenged figures of Standish are meaningless for benchmarking.
  - Should not be used to support claims of problems with software development.

# Additional information

- For additional information check IEEE Software paper on the subject.
  - The rise and fall of the Chaos report figures.
    www.cs.vu.nl/~x/chaos/chaos.pdf

- For information how to quantify IT forecast quality and how to use it in decision making check the following paper.
  - Quantifying IT forecast quality.
    www.cs.vu.nl/~x/cone/cone.pdf

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