

# Project Duration Forecasting

*EVM time conversion methods  
compared to ES*

*TM*



# EVM Time Conversion

- Four Methods – all having same basic construct
  - ❑ Forecast Time = Current Duration + Time to Complete
  - ❑ Time to Complete = Work Remaining / (Work Rate)
- Fundamental equation
  - ❑  $IEAC(t) = AT + (BAC - EV) / \text{Work Rate}$
- Work Rates (Cost or Labor Hours per Unit of Time)
  - ❑ PV average =  $PV_{cum} / \text{number of observations (n)}$
  - ❑ EV average =  $EV_{cum} / \text{number of observations (n)}$
  - ❑ PV current period
  - ❑ EV current period



# EVM & ES Forecasting

- Forecasting with ES uses the following equation
  - $IEAC(t) = \text{Planned Duration} / SPI(t)$
- The four EVM Methods are applied to **real project data** and compared to the ES prediction in four graphical charts following.
- As you will see, the last period work rates provide erratic results. The average work rates are less volatile, but are not necessarily better.



# Graph Descriptions

- Final Duration Forecasting Comparisons
  - ❑ Plots of the predictions from various methods as a function of project work accomplished
  - ❑ Various forecasts are compared visually to actual outcome
- Time Forecasting Standard Deviation Comparisons
  - ❑ Plots standard deviation of prediction from actual final duration for various methods as a function of work accomplished
  - ❑ A low value for the standard deviation indicates higher forecasting accuracy



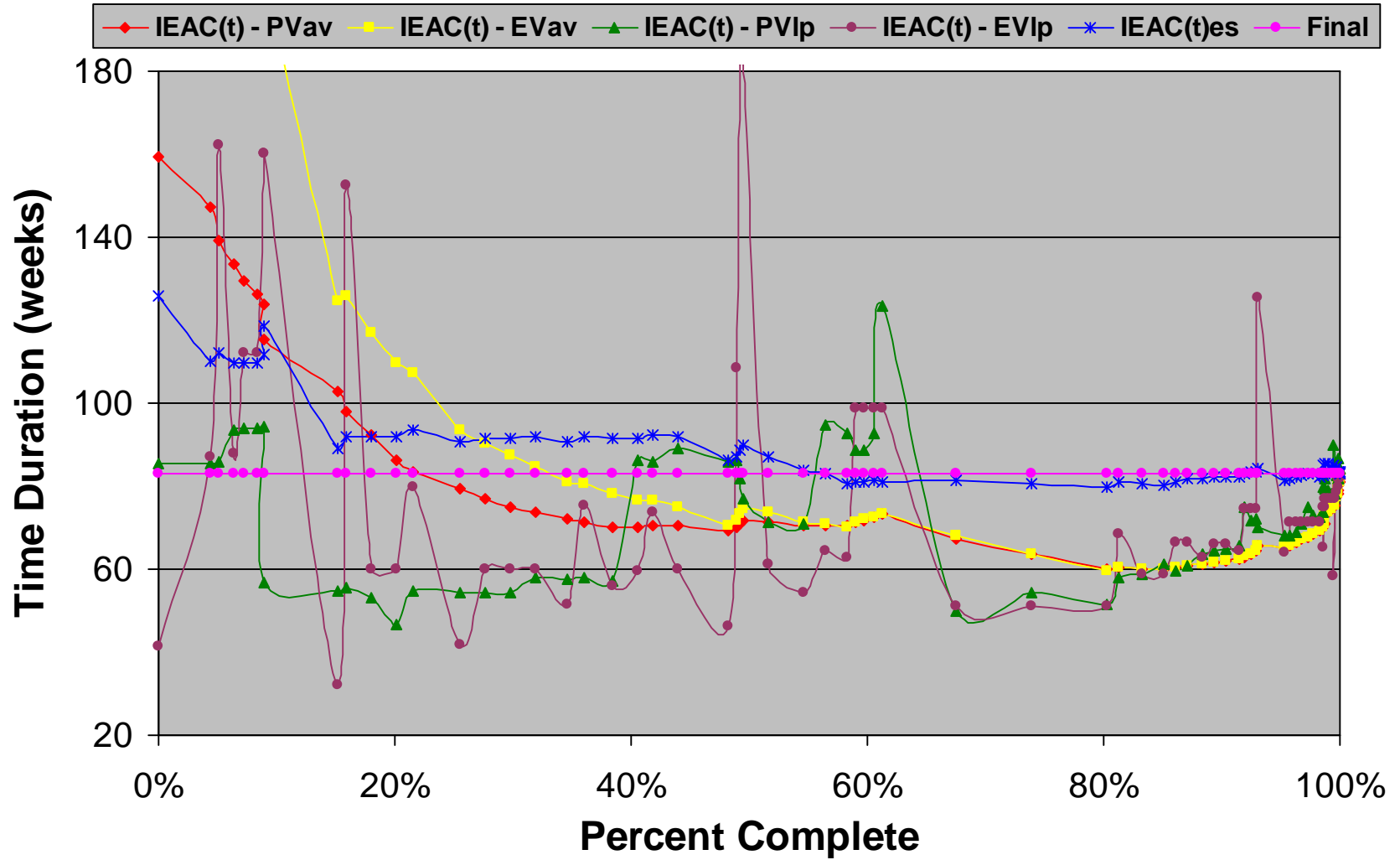
# Graph Descriptions

- Comparison of Forecasting Accuracy
  - ❑ Bar chart of average standard deviations for the EVM & ES methods over three ranges of performance
- Comparison of Forecasting Accuracy
  - ❑ Bar chart of average standard deviations for the EVM & ES methods for 20% through 100% performance range only



# Final Duration Forecasting Comparisons

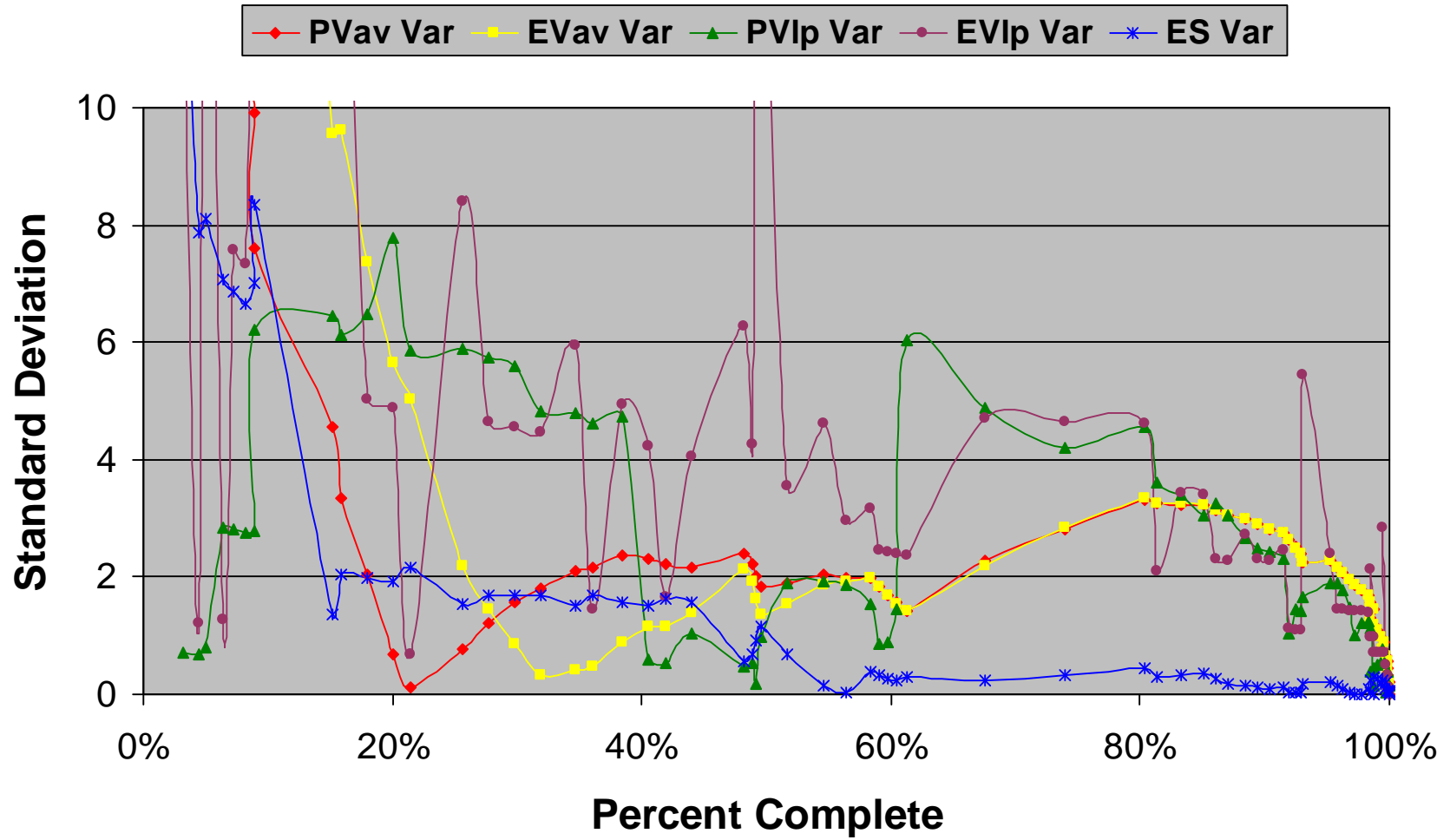
real data





# Time Forecasting Std Dev Comparisons

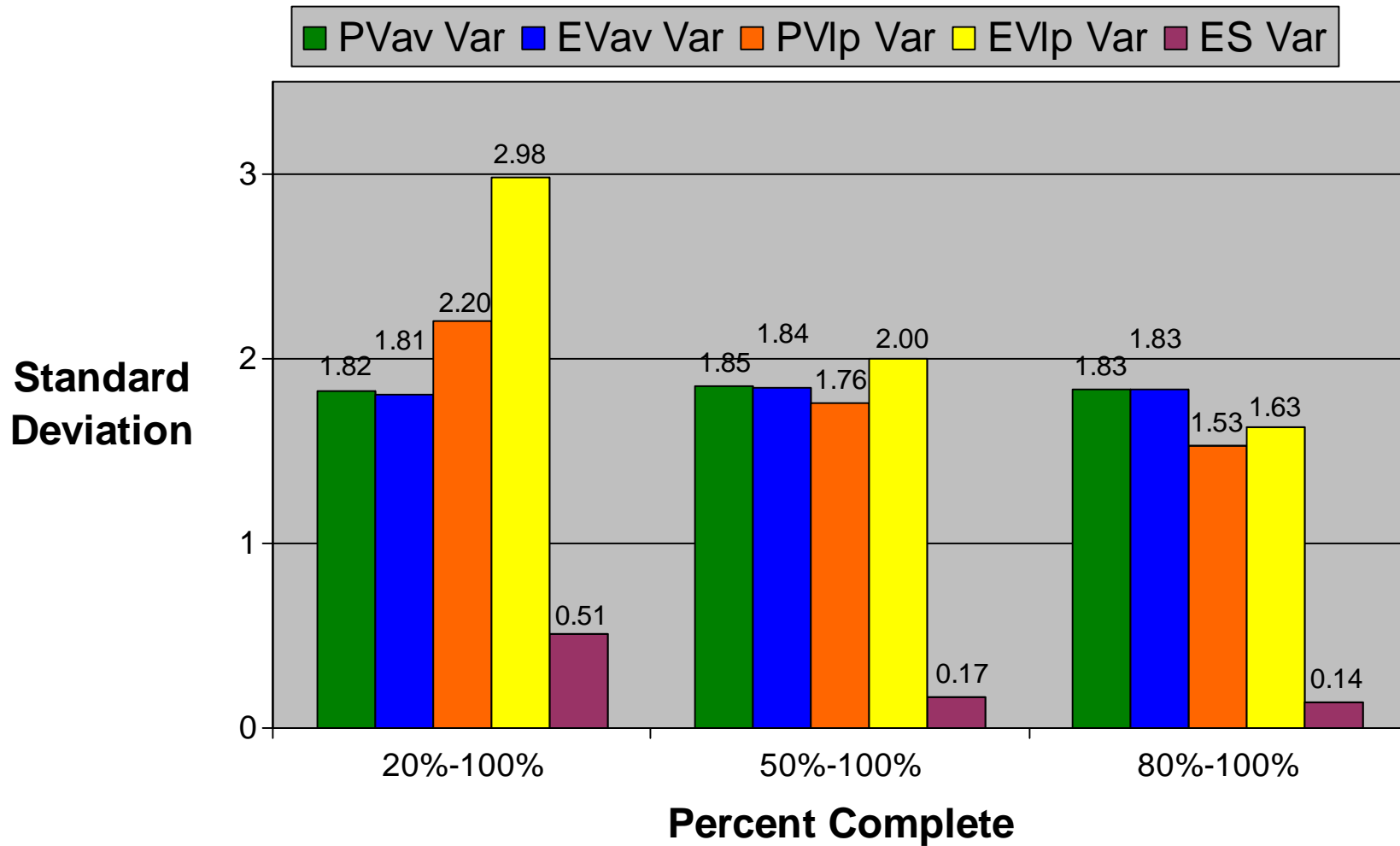
real data





# Comparison of Forecasting Accuracy

real data

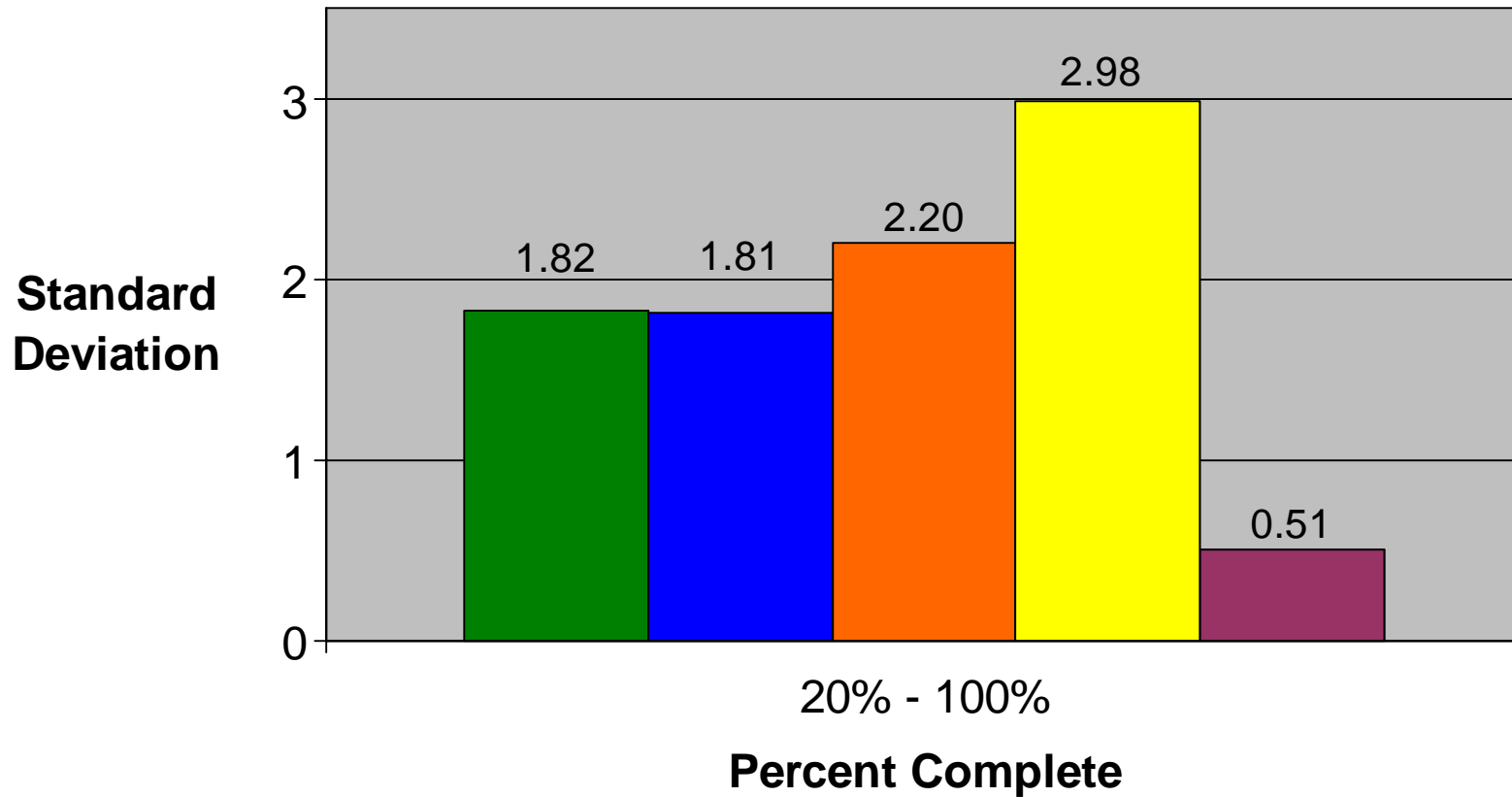






# Comparison of Forecasting Accuracy

real data





# Comparison Observations

- ES is seen to perform well over the entire period of performance for the project.
- The bar chart comparing the accuracy of forecasting of the EVM and ES methods over three ranges of performance is a succinct compelling graphic.
- For this project data, ES forecasting is considerably better than any of the EVM time conversion methods.

Research evidence is available to indicate that the ES method is superior to the EVM forecasting methods.



# Research Evidence

- See Papers Page – “Project Duration Forecasting: Comparing Earned Value Management Methods to Earned Schedule,” CrossTalk, December 2008 [Walt Lipke]
- See Presentations Page – “Project Duration Forecasting – a comparison of EVM methods and ES,” 3rd Knowledge and Project Management Symposium,” (Tulsa, OK) (August 2008) [Walt Lipke]