

University of New Mexico

## UNM Digital Repository

---

Quality Improvement/Patient Safety  
Symposium

Health Sciences Center Events

---

3-6-2020

### Fun with control charts: Monitoring neoplastic mutation frequencies over time

Laura Toth

Teah Ruetschilling  
*TriCore Laboratory*

Devon Chabot-Richards

Follow this and additional works at: [https://digitalrepository.unm.edu/hsc\\_qips](https://digitalrepository.unm.edu/hsc_qips)

---

#### Recommended Citation

Toth, Laura; Teah Ruetschilling; and Devon Chabot-Richards. "Fun with control charts: Monitoring neoplastic mutation frequencies over time." (2020). [https://digitalrepository.unm.edu/hsc\\_qips/10](https://digitalrepository.unm.edu/hsc_qips/10)

This Poster is brought to you for free and open access by the Health Sciences Center Events at UNM Digital Repository. It has been accepted for inclusion in Quality Improvement/Patient Safety Symposium by an authorized administrator of UNM Digital Repository. For more information, please contact [amywinter@unm.edu](mailto:amywinter@unm.edu), [lsloane@salud.unm.edu](mailto:lsloane@salud.unm.edu), [sarahrk@unm.edu](mailto:sarahrk@unm.edu).

## INTRODUCTION

In order to ensure a laboratory assay is performing optimally and accurately results must be monitored over time. Per the College of American Pathologists (CAP) in general, for quality assurance purposes, results of any given assay must be reviewed monthly to assess for trends, outliers, and other possible problems to ensure timely investigation and/or remedy if needed. For molecular testing, choosing an appropriate method for monitoring can be difficult as the results of testing are not quantitative and the frequency of a positive finding may vary based on a patient's clinical diagnosis and other demographic information.

## METHODS

All result data collected on multiple single gene assays to evaluate various neoplastic processes from January 2014 (as the earliest possible date) to January 2020 were reviewed. Using Excel 2010, the proportion of positive tests per month were examined utilizing control charts looking for trends, outliers, or other significant findings with control limits set to 2 standard deviations. The number of total tests per month was also plotted over time. Separate charts were made to evaluate recent data (January 2018-January 2020). The assays examined included: BRAF, CALR, CEBPA, EGFR, FLT-3, KIT, KRAS, MGMT, MPL, and NPM1.

## RESULTS

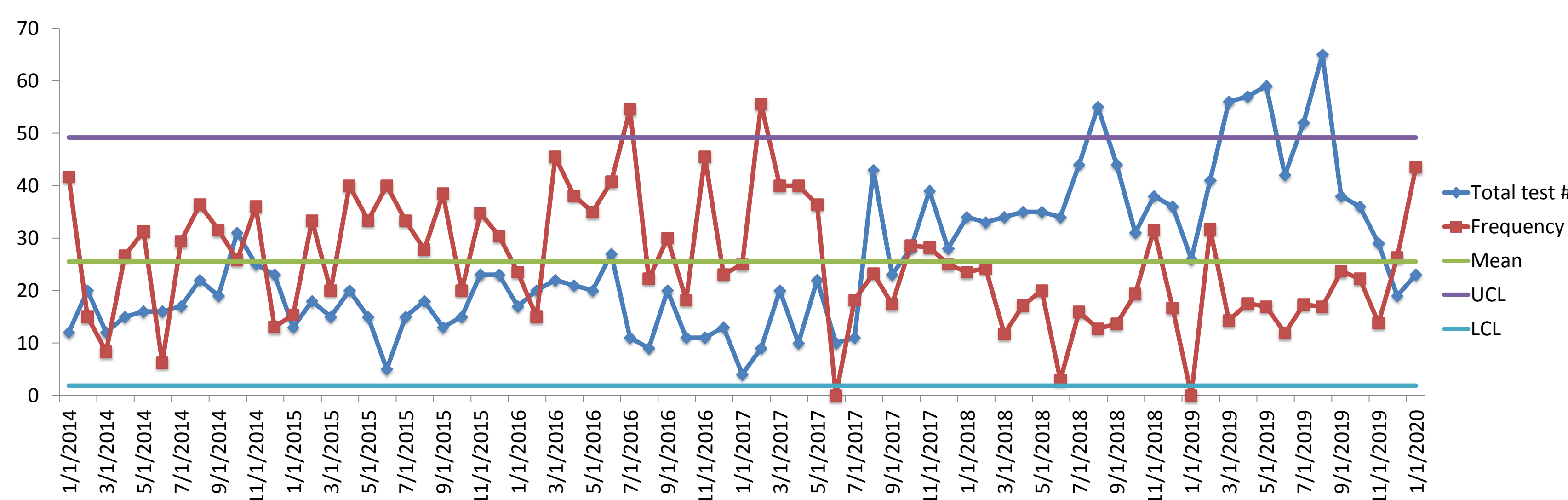


Figure 1: BRAF mutation frequencies starting in 2014

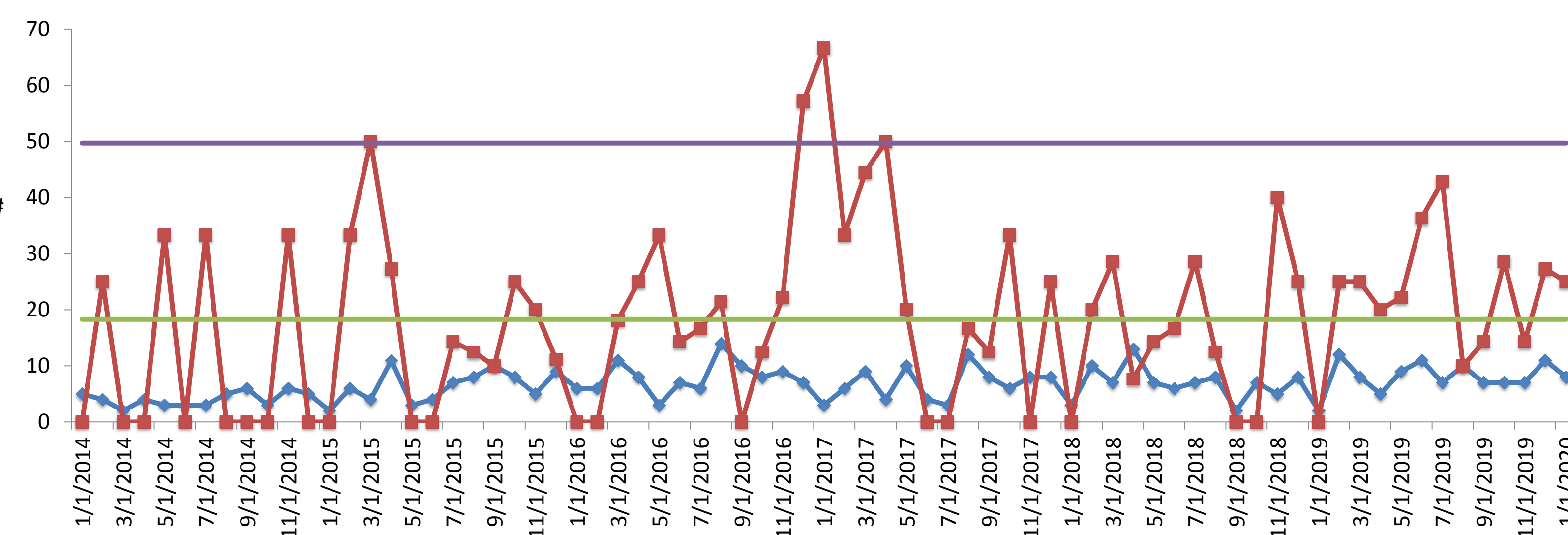


Figure 2: KIT mutation frequencies starting in 2014

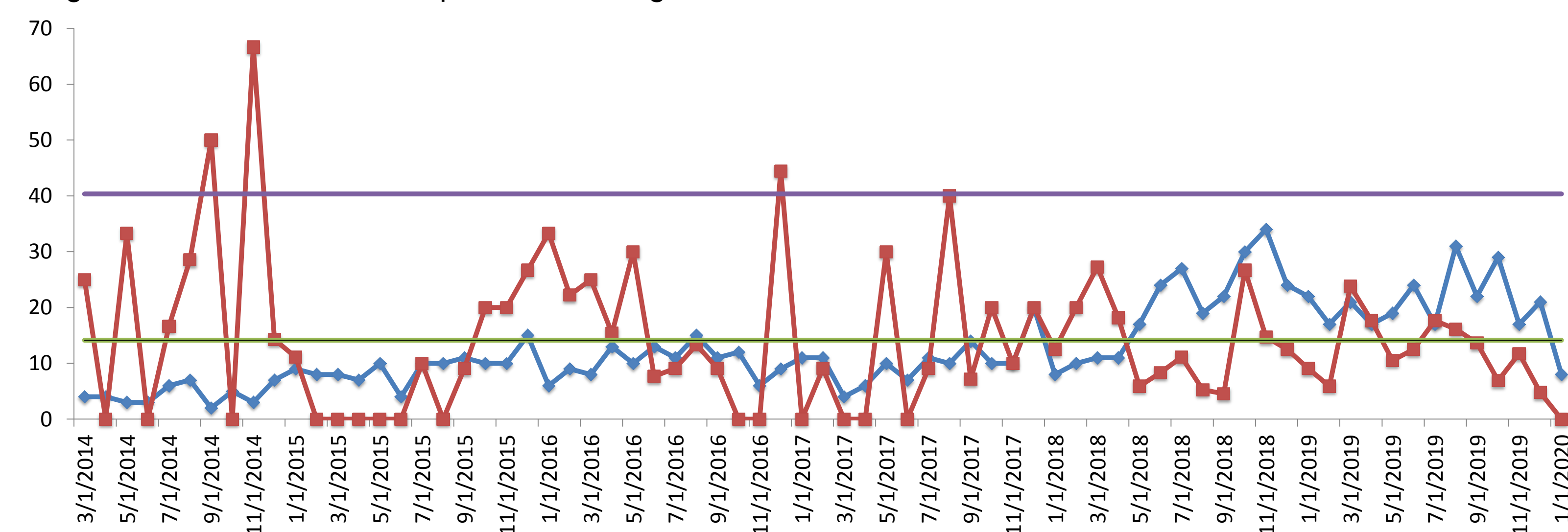


Figure 3: FLT-3 internal tandem duplication mutation frequencies starting in 2014

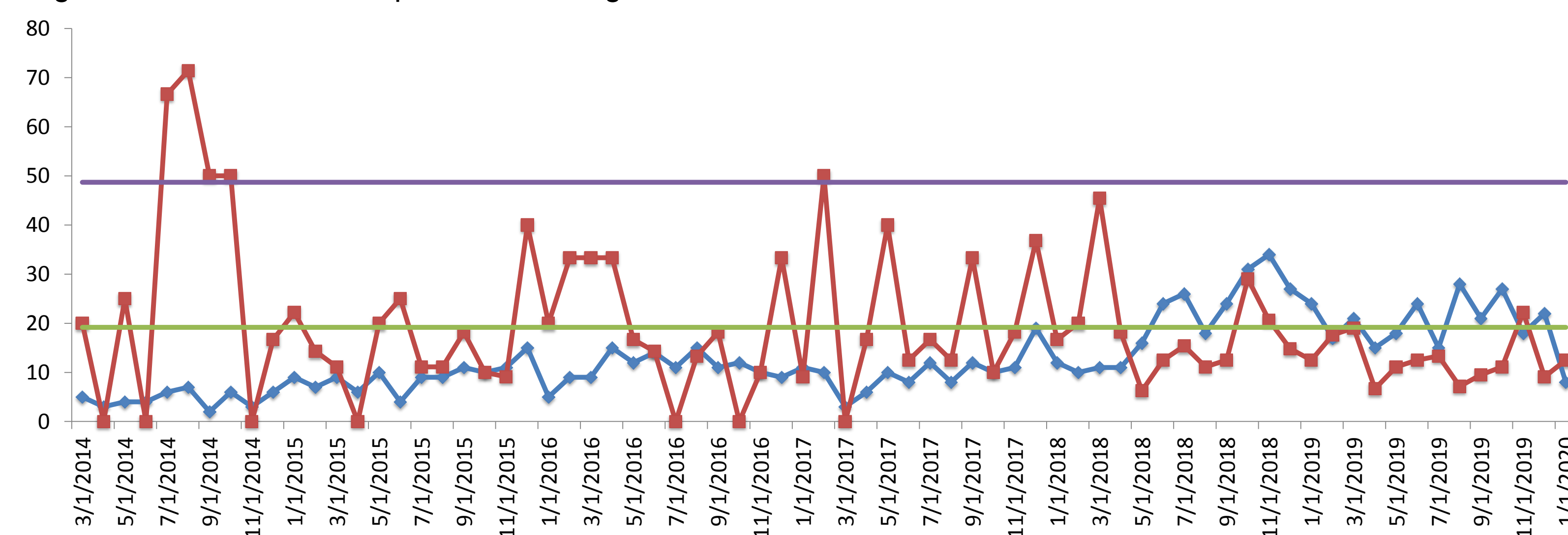


Figure 4: NPM1 mutation frequencies starting in 2014

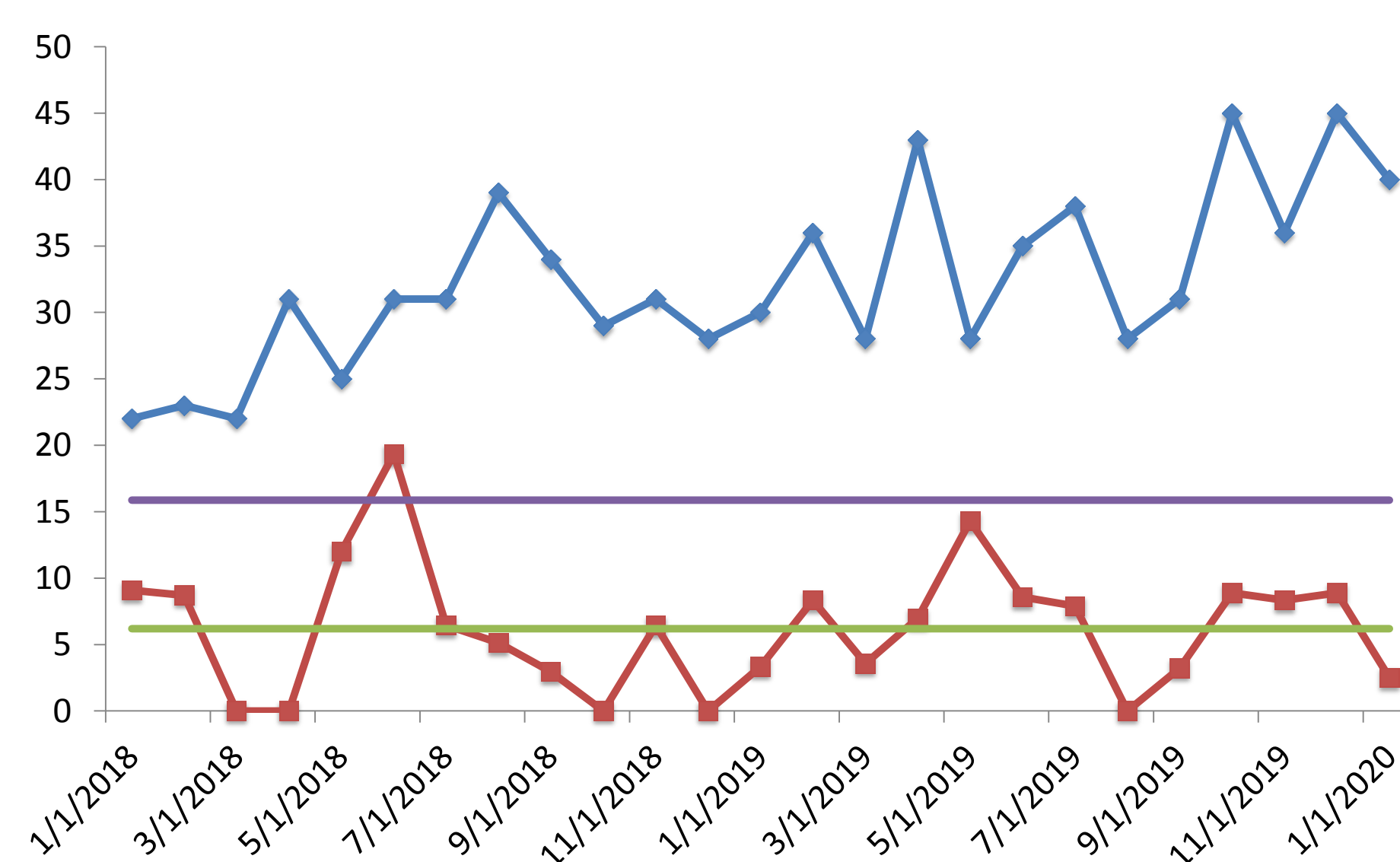


Figure 5: CALR mutation frequencies starting in 2018

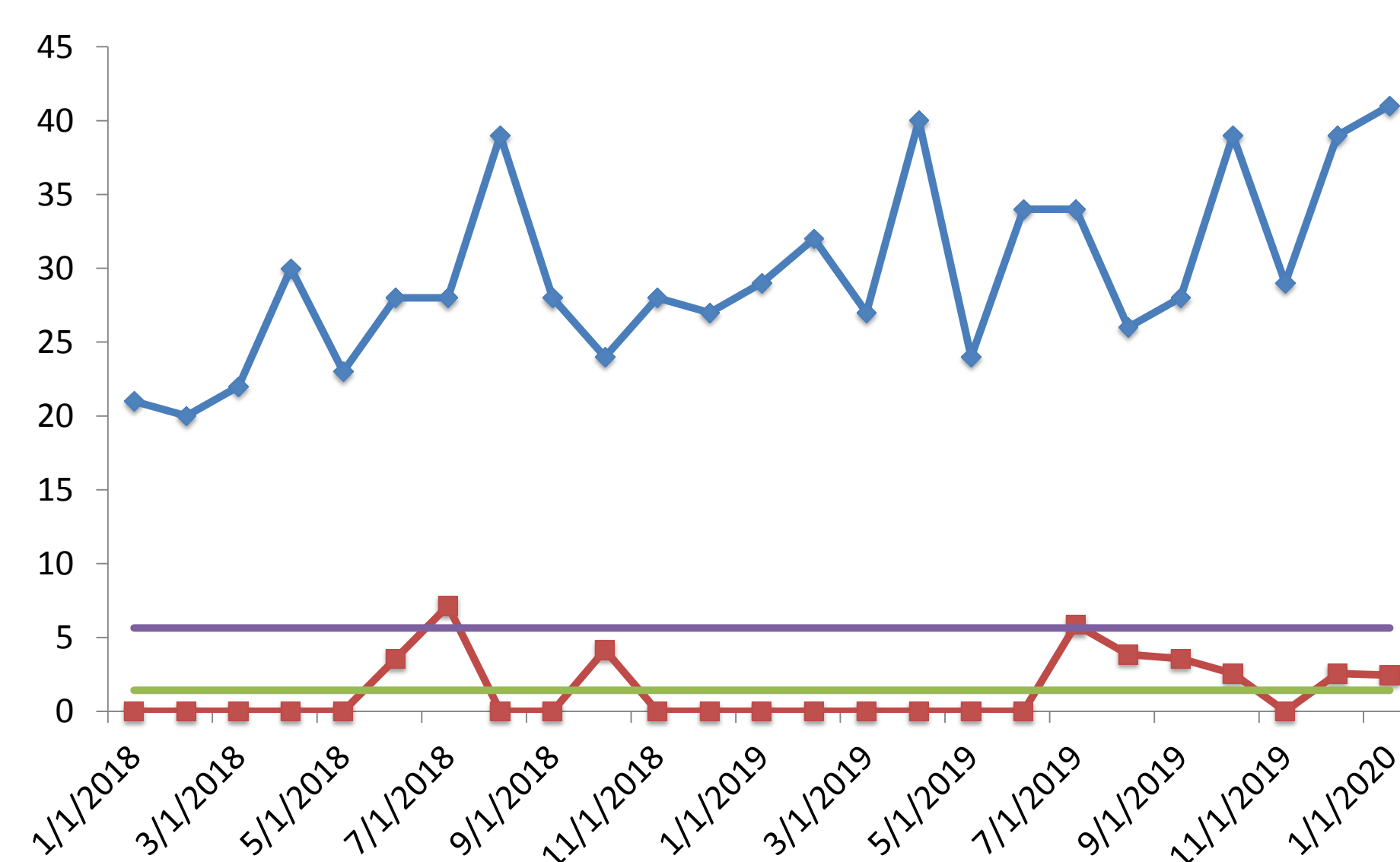


Figure 6: MPL mutation frequencies starting in 2018

## CONCLUSIONS

Utilizing control charts for monitoring molecular assays can be very useful for test monitoring and quality assurance. Outliers and trends can be easily recognized allowing for rapid investigation and remedy if needed. Finally, review of this data gave us an opportunity to better understand the frequency of finding mutations, in the examined genes, in our local population.