**IST772 - Week 11: Final Examination Rubric for Instructors**

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| ***Introductory/Descriptive Reports:*** | **Expected/Exemplary Responses** | **Available Points** | **Earned Points** |
| 1. How have U.S. vaccination rates varied over time? Are vaccination rates increasing or decreasing? Which vaccination has the highest rate at the conclusion of the time series? Which vaccination has the lowest rate at the conclusion of the time series? Which vaccine has the greatest volatility? | Show and describe time series graphs. Run changepoint analysis of means on undifferenced series. Run changepoint analysis of variance on differenced series. | 2 | 2 |
| 1. What proportion of public schools reported vaccination data? What proportion of private schools reported vaccination data? Was there any credible difference in overall reporting proportions between public and private schools? | 97.4% of California public schools reported vaccination data in 2013. In other words, of the 5732 public schools, 5584 schools reported vaccination data. 84.7% of California private schools reported vaccination data in 2013. In other words, of the 1649 private schools, 1397 schools reported vaccination data. (A chi-square analysis and a Bayesian contingency table analysis of the differences in proportions.) | 2 | 2 |
| 1. What are 2013 vaccination rates for individual vaccines (i.e., DOT, Polio, MMR, and HepB) in California public schools? How do these rates for individual vaccines in California districts compare with overall US vaccination rates (make an informal comparison to the final observations in the time series)? | Provide a subjective comparison of CA vaccination rates to 2013 levels in the time series. DTP1, Pol3, and MCV1 are all lower in CA. HepB is higher in CA. Hib3 is not reported in CA. | 2 | 2 |
| 1. Among districts, how are the vaccination rates for individual vaccines related? In other words, if students are missing one vaccine are they missing all of the others? | (Run and interpret correlation matrix. 0.894 is the lowest and 0.983 is the highest.) | 3 | 3 |
| ***Predictive Analyses:*** |  |  |  |
| 1. What variables predict whether or not a district’s reporting was complete? | Logistic regression, both frequentist and Bayesian, with transformation of coefficients into plain odds and interpretation. Square root transformation of school count and total enrollments. Pseudo-R-squared for frequentist results. More enrolled students increases odds of reporting, while more schools does the opposite.) | 3 | 3 |
| 1. What variables predict the percentage of all enrolled students with completely up-to-date vaccines? | (Linear regression, both frequentist and Bayesian, with interpretation of coefficients. Square root transformation of school count and total enrollments) | 3 | 3 |
| 1. What variables predict the percentage of all enrolled students with belief exceptions? | (Linear regression, both frequentist and Bayesian, with interpretation of coefficients. Square root transformation of school count and total enrollments) | 4 | 4 |
| 1. What’s the big picture, based on all of the foregoing analyses? The staff member in the state legislator’s office is **interested to know how to allocate financial assistance to school districts to improve both their vaccination rates and their reporting compliance**. What have you learned from the data and analyses that might inform this question? | (Integration of time series for context. Mention of the differences between private and public. Role of school count and total enrolled. Role of poverty. ) | 6 | 6 |
| Total |  | 25 | 25 |