Predicting readmission probability for diabetes inpatients

Modern Data Mining

Contents

#Executive Summary

#Detailed Report ##Description of Data The dataset used for this analysis included 101,766 encounters for 71,518 unique patients.

##Analysis

##Conclusion

##Appendix

```
## Warning in chisq.test(table(y, g)): Chi-squared approximation may be incorrect
```

Table 1: Table 1: Basic descriptive statistics of the study population by whether they were readmitted to the hospital within 30 days or not.

	No	Yes	P-value
	(N=65225)	(N=6293)	
Age Group			
0-19	660 (1.0%)	29 (0.5%)	<0.001
20-59	21513 (33.0%)	1657 (26.3%)	
60-79	30932 (47.4%)	3238 (51.5%)	
80+	12120 (18.6%)	1369 (21.8%)	
Race			
AfricanAmerican	11794 (18.1%)	1093 (17.4%)	0.00364
Asian	456 (0.7%)	41 (0.7%)	
Caucasian	48675 (74.6%)	4816 (76.5%)	
Hispanic	1395 (2.1%)	122 (1.9%)	
Other	1098 (1.7%)	80 (1.3%)	
Unknown	1807 (2.8%)	141 (2.2%)	
Gender			
Female	34655 (53.1%)	3370 (53.6%)	0.708
Male	30567 (46.9%)	2923 (46.4%)	
Unknown/Invalid	3 (0.0%)	0 (0%)	
Source of Admission			
Emergency Room	34833 (53.4%)	3457 (54.9%)	0.143
Other	5734 (8.8%)	538 (8.5%)	
Physician Referral	20132 (30.9%)	1875 (29.8%)	
Transfer from Home Health	4526 (6.9%)	423 (6.7%)	
Reason for Admission			
Elective	12774 (19.6%)	1143 (18.2%)	0.045
Emergency	33228 (50.9%)	3262 (51.8%)	
Other	7344 (11.3%)	739 (11.7%)	
Urgent	11879 (18.2%)	1149 (18.3%)	
Length of Stay (days)			
Mean (SD)	4.24 (2.93)	4.80 (3.06)	<0.001
Median [Min, Max]	3.00 [1.00, 14.0]	4.00 [1.00, 14.0]	
Number of Lab Procedures			
Mean (SD)	42.9 (20.0)	44.9 (19.3)	<0.001
Median [Min, Max]	44.0 [1.00, 121]	46.0 [1.00, 132]	
Number of Non-Lab Procedures			
Mean (SD)	1.43 (1.76)	1.42 (1.73)	0.705
Median [Min, Max]	1.00 [0, 6.00]	1.00 [0, 6.00]	
Number of Medications Prescribed During Encounter			
Mean (SD)	15.6 (8.30)	16.6 (8.32)	<0.001
Median [Min, Max]	14.0 [1.00, 79.0]	15.0 [1.00, 81.0]	
Number of Diagnoses			
Mean (SD)	7.22 (2.01)	7.51 (1.85)	<0.001
Median [Min, Max]	8.00 [1.00, 16.0]	8.00 [1.00, 16.0]	
Change in Diabetes Medication During Encounter			
No	36180 (55.5%)	3314 (52.7%)	<0.001
Yes	29045 (44.5%)	2979 (47.3%)	
Any Diabetes Medication Prescribed During Encounter			
No	15936 (24.4%)	1263 (20.1%)	<0.001
Yes	49289 (75.6%)	5030 (79.9%)	
Glucose Serum (mg/dL)			
>200	866 (1.3%)	103 (1.6%)	0.0958
>300	683 (1.0%)	73 (1.2%)	
None	62111 (95.2%)	5951 (94.6%)	

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>200	866 (1.3%)	103 (1.6%)	0.0958
>300	683 (1.0%)	73 (1.2%)	
None	62111 (95.2%)	5951 (94.6%)	
Norm	1565 (2.4%)	166 (2.6%)	
HbA1c (%)			
>7	2645 (4.1%)	246 (3.9%)	0.145
>8	5794 (8.9%)	510 (8.1%)	
None	53319 (81.7%)	5213 (82.8%)	
Norm	3467 (5.3%)	324 (5.1%)	
Number of Outpatient Visits in Prior Year			
1-2/Year	6191 (9.5%)	701 (11.1%)	<0.001
3-4/Year	1540 (2.4%)	161 (2.6%)	
5+/Year	644 (1.0%)	69 (1.1%)	
None	56850 (87.2%)	5362 (85.2%)	
Number of Emergency Visits in Prior Year			
0	60636 (93.0%)	5678 (90.2%)	<0.001
1+	4589 (7.0%)	615 (9.8%)	
Number of Inpatient Visits in Prior Year	3		
0	58052 (89.0%)	5025 (79.9%)	<0.001
1+	7173 (11.0%)	1268 (20.1%)	
Metformin Dose			