Recommender System For Nursing Homes

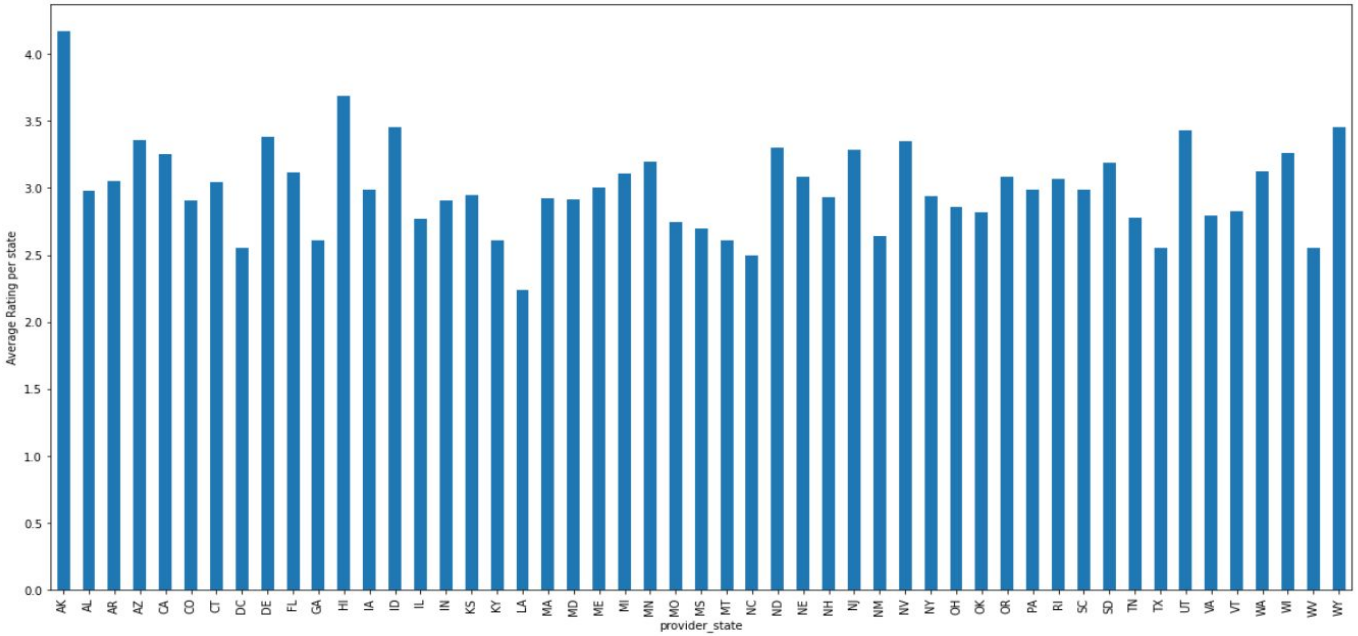
By: Shafiur Chowdhury and Ashwin Verma

Project Objectives

- Build a System that can give each nursing home an overall quality rating Based Off Various Features
- Try to find features graphically that might have influenced our system to give a rating that it did
- See what poorly rated nursing homes can do to improve their quality

Description Of Data

General information on currently active nursing homes, including number of certified beds, quality measure scores, staffing, and other information used in the Five-Star Rating System.



OR	129
WV	123
SD	98
UT	98
ME	88
ID	80
ND	78
RI	75
NH	73
MT	70
NM	68
NV	65
HI	43
DE	43
VT	35
WY	35
AK	20
DC	17
PR	6
GU	1

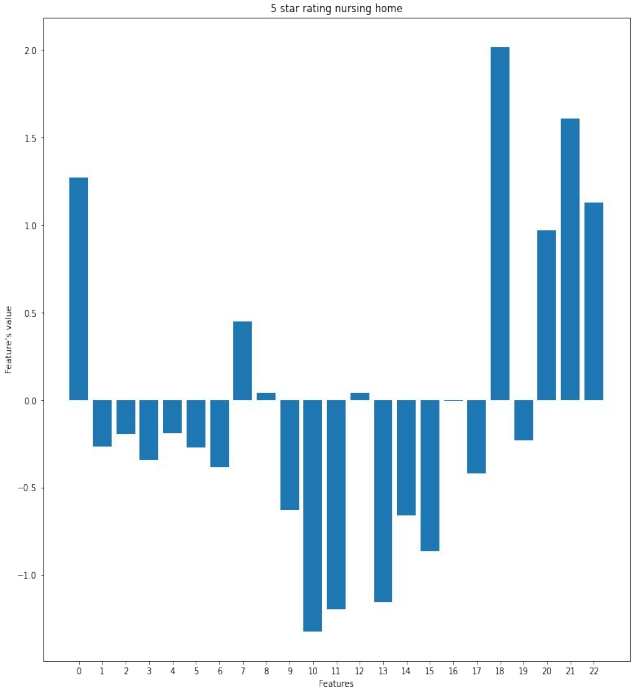
Model Description

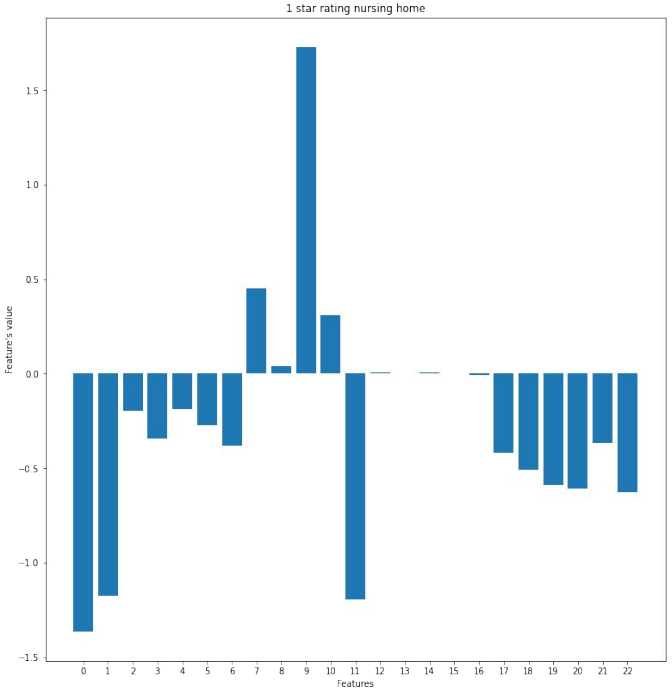
- Accuracy= good rating/(good rating + bad rating)
- Good rating: abs(predicticted-actual) <=1, Bad Rating: abs(predicticted-actual) >1

	A	B	C
1	Model Tuning	TEST DATA ACCURACY	
2		User Based	Item Based
3	Dropped All Null Values, n neighbors=5	0.985	0.9558
4	Dropped All Null Values, n neighbors=8	0.986	0.826
5	Dropped All Null Values, n neighbors=1	0.961	0.98
6	Dropped All Null Values n neighbors=10	0.988	0.779
7	Fill Null with mean, n neighbors=5	0.988	0.95
8	Fill Null with mean, n neighbors=8	0.988	0.84
9	Fill Null with mean, n neighbors=1	0.96	0.98
10	Fill Null with mean, m neighbors=10	0.987	0.79
11			

Description Of Results

- Graph of 2 random samples that the system predicted exactly correct





{0: 'number_of_certified_beds
', 1: 'average_number_of_residents_per_day
', 2: 'provider_resides_in_hospital
', 3: 'continuing_care_retirement_community
', 4: 'special_focus_status
', 5: 'abuse_icon
', 6: 'most_recent_health_inspection_more_than_2_years_ago
', 7: 'with_a_resident_and_family_council
', 8: 'automatic_sprinkler_systems_in_all_required_areas
', 9: 'health_inspection_rating
', 10: 'qm_rating
', 11: 'staffing_rating
', 12: 'reported_nurse_aide_staffing_hours_per_resident_per_day
', 13: 'reported_licensed_staffing_hours_per_resident_per_day
', 14: 'reported_total_nurse_staffing_hours_per_resident_per_day
', 15: 'registered_nurse_hours_per_resident_per_day_on_the_weekend
', 16: 'number_of_administrators_who_have_left_the_nursing_home
', 17: 'number_of_facility_reported_incidents
', 18: 'number_of_substantiated_complaints
', 19: 'number_of_citations_from_infection_control_inspections
', 20: 'number_of_fines
', 21: 'number_of_payment_denials
', 22: 'total_number_of_penalties
'}