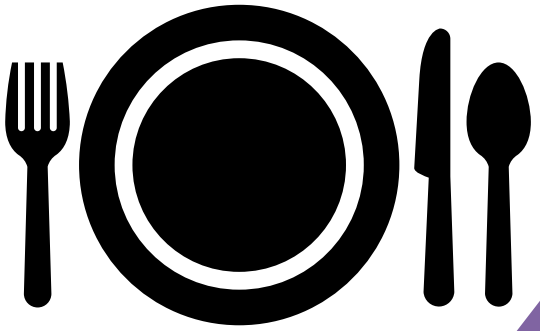
INSPECTOR'S HELPER

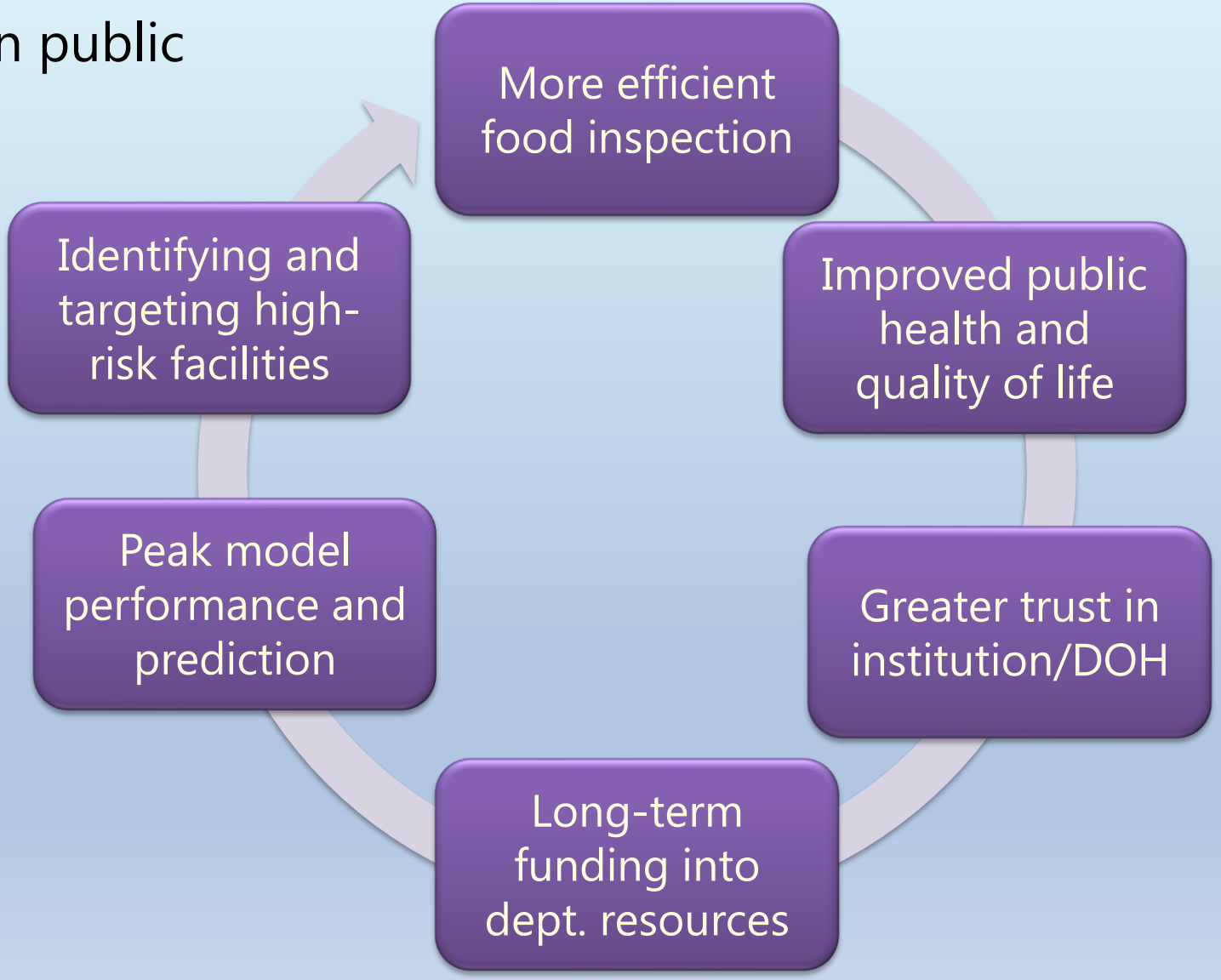


An Application to aid in effective food inspection for establishments in Chicago, IL

MUSA 2024
Jill Kalman and Alice Kansiime

Why care?

- Impact on public



Using the app

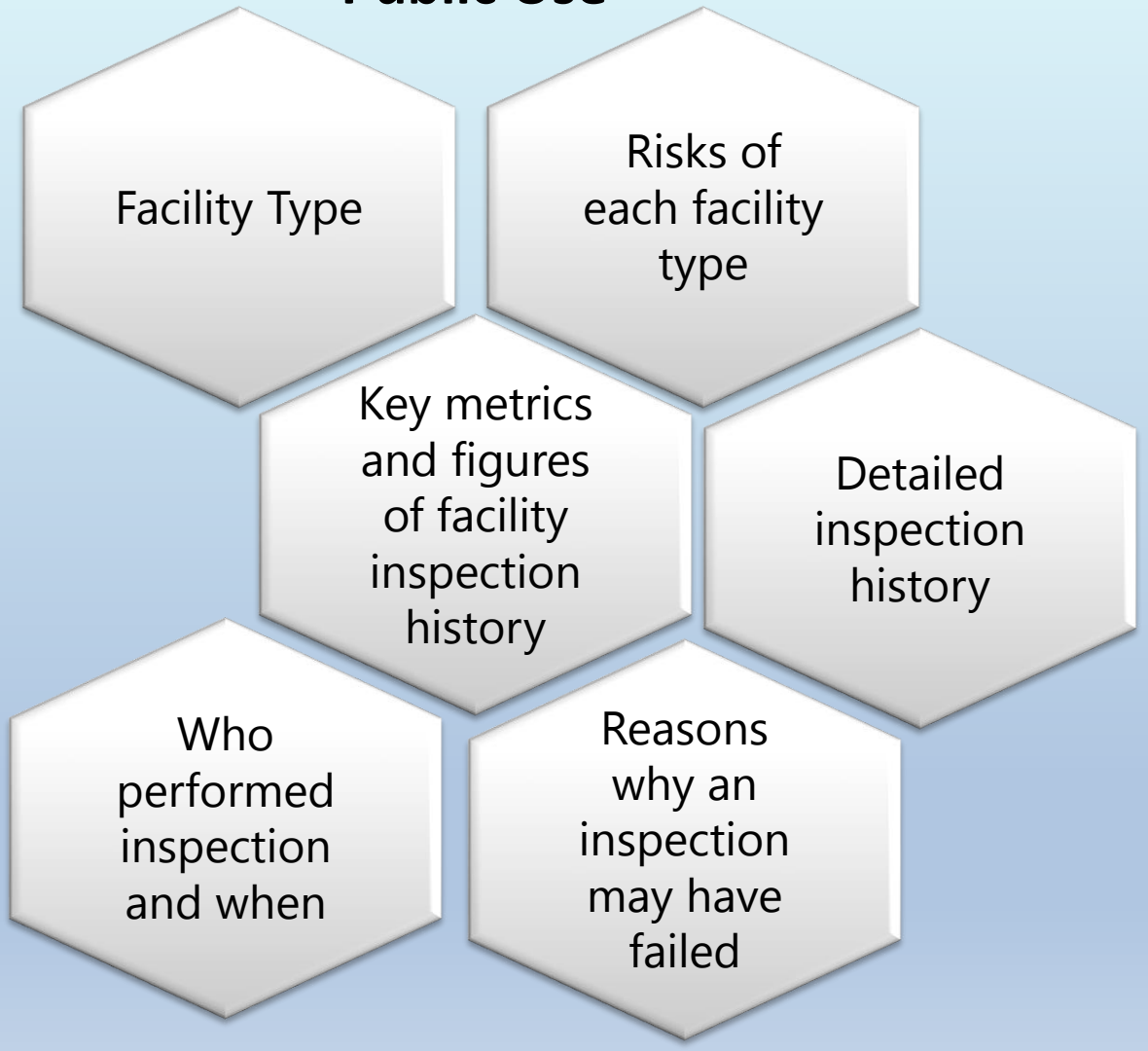
Inspector Use

App determines highest priority facilities

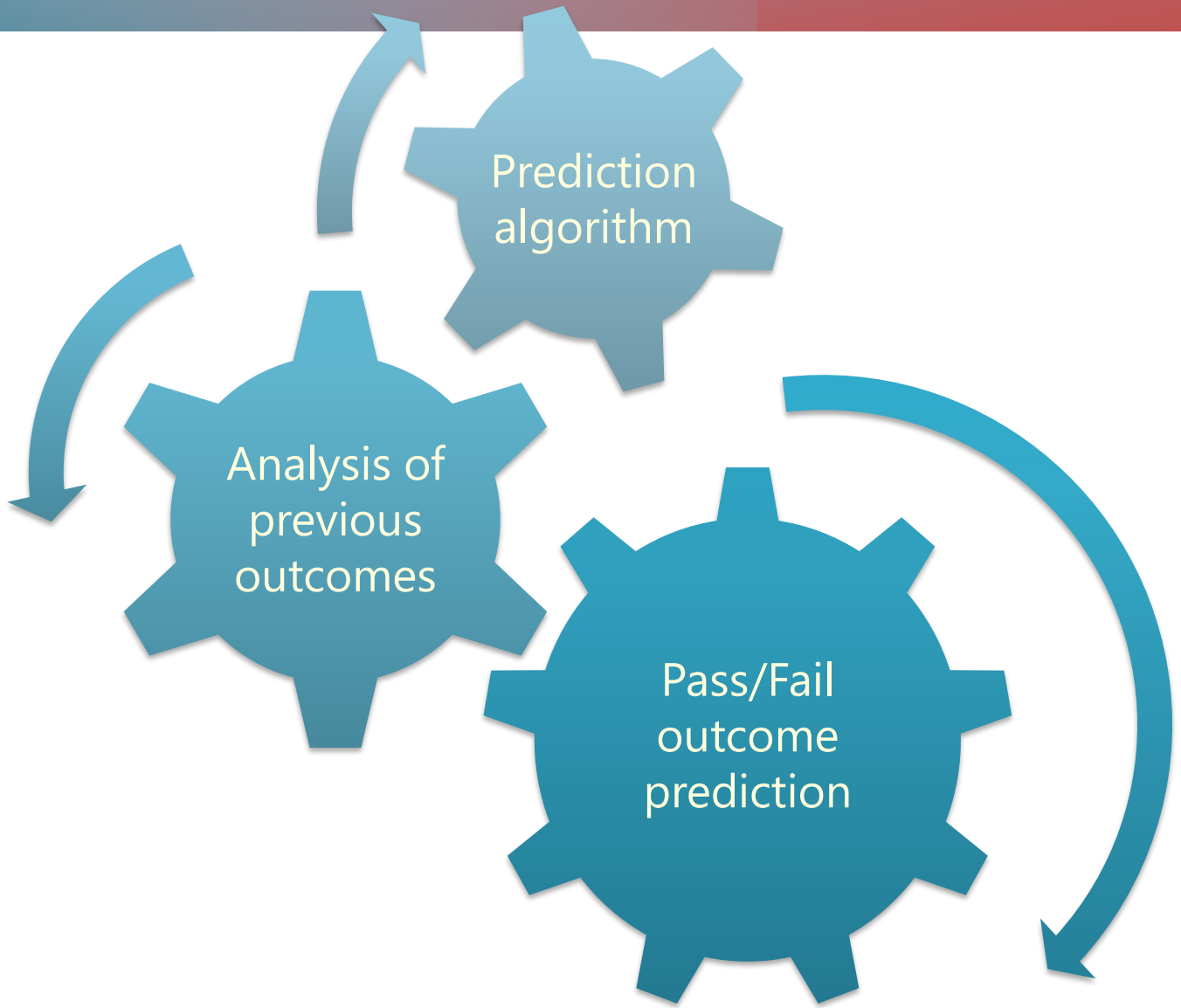
Create list of priority facilities per inspector

Develop weekly inspection itinerary

Public Use



How the Model Works



What Data Was Used

Public inspection data from the Department of Health of Chicago

Chicago population data from the U.S census

What We Found Out

The **higher** the presence of black population is surrounding a restaurant, the more likely it will fail

The **lower** the presence of professional degrees surrounding a facility, the more likely it will fail

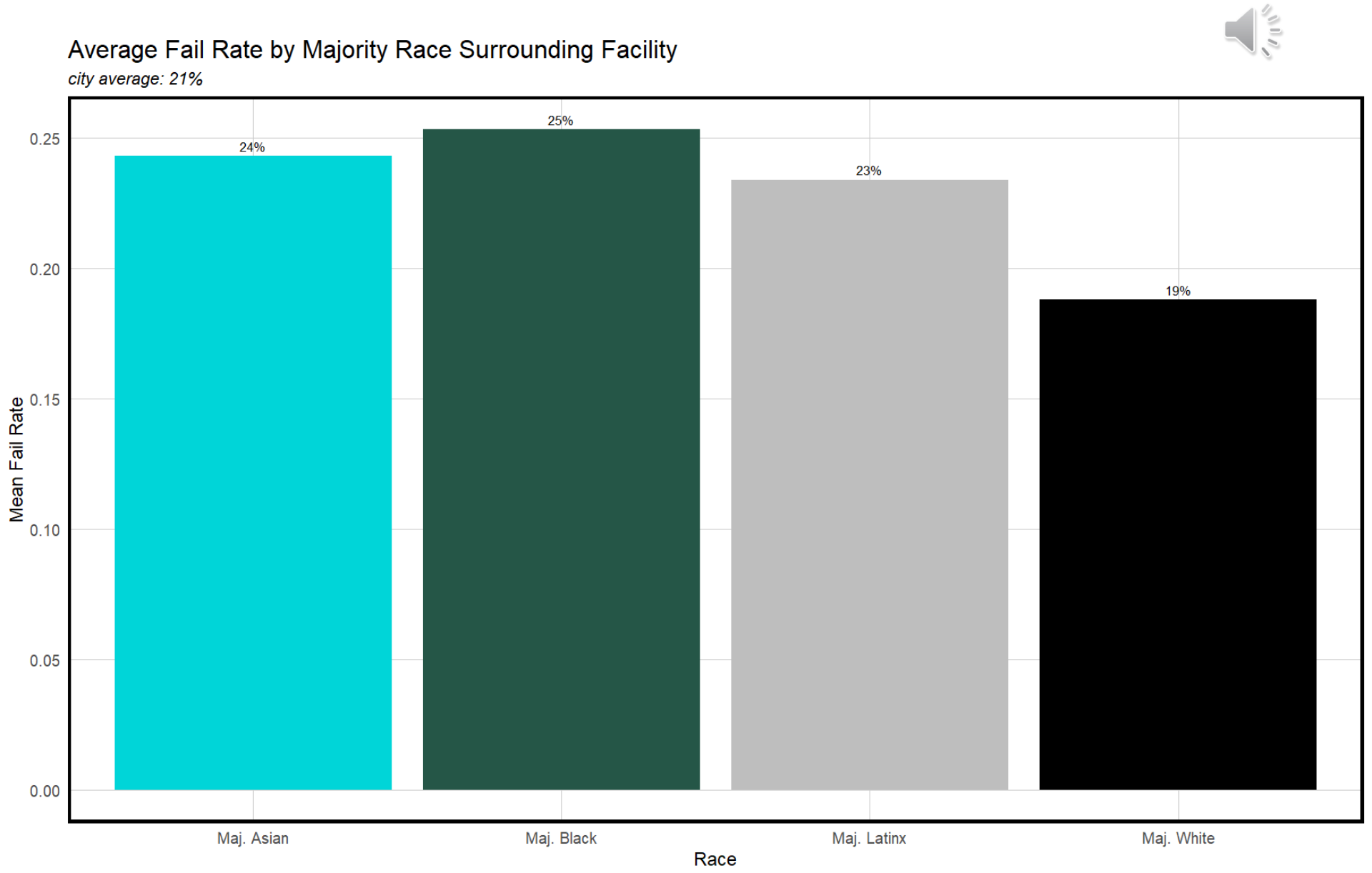
The **more** inspections a facility fails, the more likely they are predicted to fail again

Facilities that have **never** failed an inspection are always predicted to pass

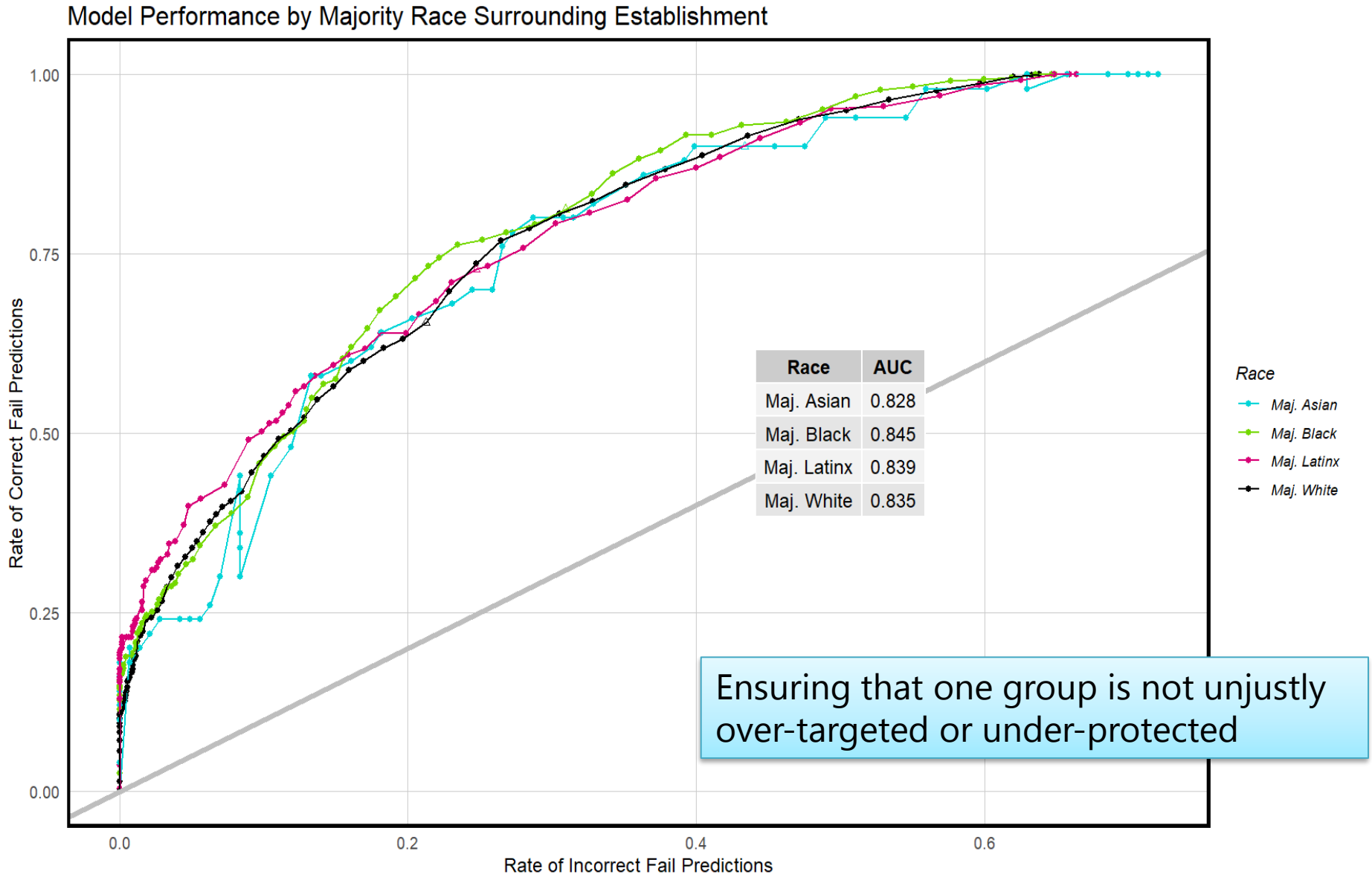
Things to Remember about App

A platform that the public can use to make *informed health decisions* for themselves and their family

We care to avoid making predictions that *disproportionately* over-serve OR under-serve a certain population


Average Fail Rate by Majority Race Surrounding Facility
city average: 21%
Mean Fail Rate
0.25
0.20
0.15
0.10
0.05
0.00
24%
25%
23%
19%
Maj. Asian
Maj. Black
Maj. Latinx
Maj. White
Race

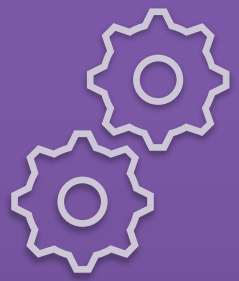
Fit Check



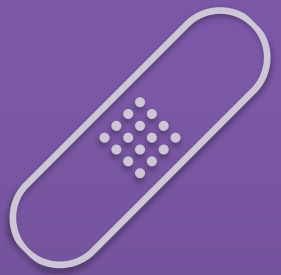
Race	AUC
Maj. Asian	0.828
Maj. Black	0.845
Maj. Latinx	0.839
Maj. White	0.835

Ensuring that one group is not unjustly over-targeted or under-protected

Further Quality Check



Refining to avoid least desired outcome



Awareness of where model can be improved

Identifying least desired outcome

Least Desired Outcome

- We want to avoid outcomes with the greatest risk to public health: **incorrectly predicting an establishment passes, but ultimately fails in real-time.**

Results and Key Takeaways

Count	Description
5303	Model predicted PASS and inspection was passed
1047	Model predicted FAIL and inspection was failed
401	Model predicted PASS but inspection was failed
1724	Model predicted FAIL but inspection was passed

75% of all predictions will be correct

81% of all incorrect predictions **will not have any negative impact** on public health

Only 5% of all possible outcomes have potential to negatively impact public