

EXAMPLE PRESENTATION

Do a rental building's cosmetics tell you if it's any good?

Example Blogathon Entry from Team X

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Dataset Used

RentSafeTO rental building evaluation data, which includes numeric evaluations of many building features derived from Toronto rental building inspections.

Dataset contains **3471** rows and **12** features, **10** of which are **cosmetic**. Inspectors rate cosmetic features on a 0 to 3 scale (0 being low and 3 high). Some of these features:

- Evaluations of `**FENCING**`: i.e. if the fence is clean and secure
- Evaluations of `**BUILDING CLEANLINESS**`: i.e. if building grounds are free of debris
- Evaluations of `**GRAFFITI**`: i.e. the extent of graffiti on building grounds

We also use the following features of each building in our analysis

- The `**LONGITUDE**` of each building as well as its `**LATITUDE**`

Goal: Predict if a building is **GOOD** based on assessments of the features above. **GOOD** buildings are defined as those with above average **overall inspection ratings**. Overall ratings range between **0 and 100** and are functions of cosmetic features and many others that are critical to building safety (e.g. the presence of fire exits, carbon monoxide detectors, etc).

RentSafeTO: Get to Know Your Building Score

Use the City's interactive map to view and print evaluation results for apartment buildings across Toronto.

[View Interactive Map](#)

Building evaluations are conducted using a tool to measure how well a building complies with bylaws and to calculate scores for all registered buildings. During an evaluation, bylaw enforcement officers will inspect the interior and exterior of the building and ensure that building owners meet the requirements outlined under the [Apartment Building](#) and [Property Standards](#) bylaws.

Below you will find a list of categories and inspection criteria used when conducting a building evaluation broken down by exterior, interior and mandatory plans and building requirements. Each item is inspected and assigned a score from one to three with one being the lowest and three being the highest. Categories are weighted based on risk to health and safety.

- High Risk = 3%
- Moderate Risk = 2%
- Cosmetic = 0.5%

Evaluation Scores

Evaluation scores are calculated using a combination of proactive data (scores from the 50 categories) and reactive data (active violations). The scores are then converted to a percentile ranking so buildings are scored in comparison to other buildings within the program. Buildings that score in the bottom 2.5 percentile are subject to an audit.

Methods

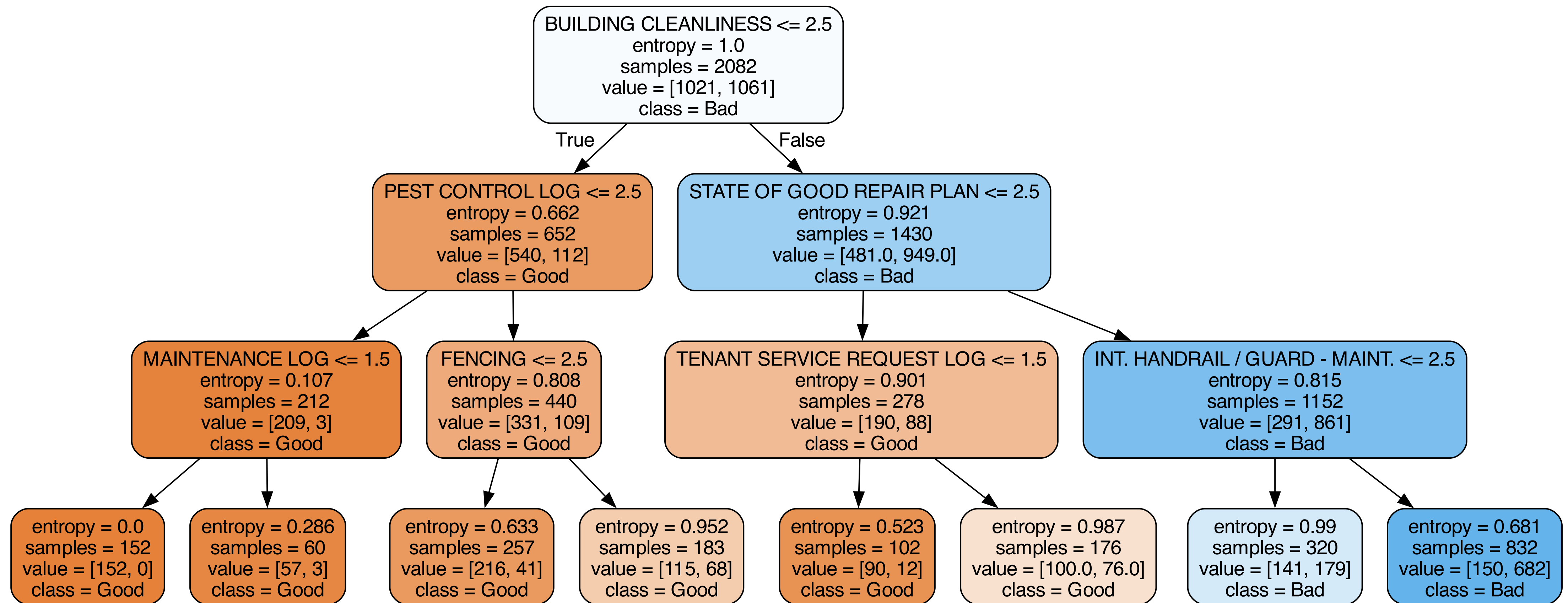
1. Train Decision Tree to predict Goodness based on Cosmetic Features and Location

- Target variable is goodness, as defined as having an above average rating.
- Train/Test/Validation Split: 60%/20%/20%
- Grid Search for best hyper-parameters (based on split criterion, min size of leaf, as well as tree depth)

2. Evaluate Best Decision Tree

- Explore the decision-making heuristics encoded by resulting tree
- Calculate its overall accuracy
- Explore potential biases based on geographic location

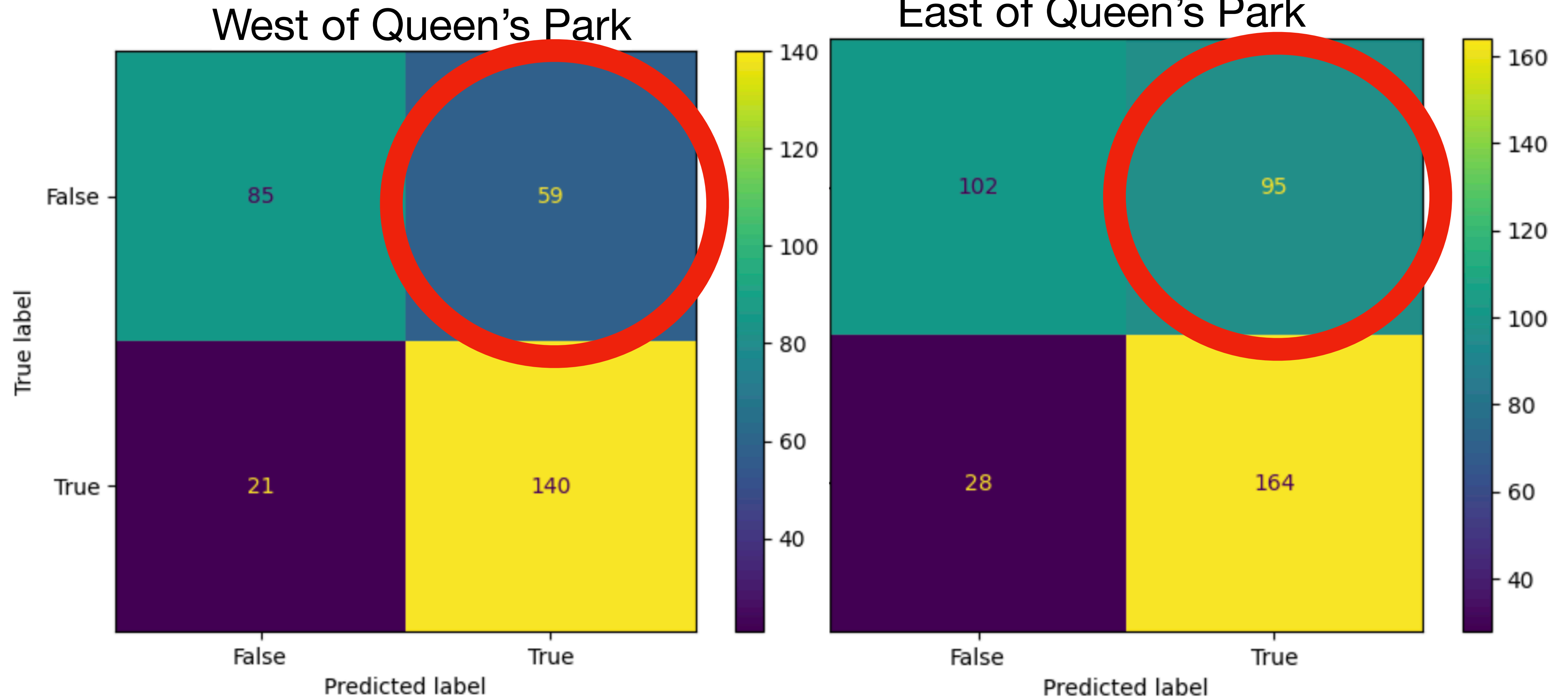
Results



Overall accuracy on validation set: 77.6%

Most informative cosmetic feature: building cleanliness!

Results



But ... precision is lower on the **east** side than the **west**!

We are more likely to miss some “bad” buildings east of Queen's Park.

Take Home Message

- If you can **only look at a building's overall cleanliness**, take heart as this is a reasonably good indicator of the building's overall **safety** and **quality** as determined by city inspectors.
- However, be more cautious when using this heuristic **east of queen's park**.
- If you have more time at your disposal, check out the the building's **state of good repair plan** as well!