



Automated Store Walks

Building a model that can flag shelf level issues to better inform store walks



Objective

- Can machine learning help us manage sales floor conditions?
- Can ML prove both effective and efficient?
- Can ML find patterns where we don't see any?



Data: What I Walked

- About 1000 UPCs from the pet set
- Scanned tags from about an aisle and a half worth - excluded pet toys (seasonal), medicines, fish/reptile sets
- Made sure to avoid scanning Warehouse out of stocks - the shelf issue there simply that the warehouse is out of the product



Data: What's Available

- SRS isn't available (at a store level), despite how integral it is to making decisions about the floor
- BI can be queried for specific UPCs, so I could basically pull sales and billing history of everything I was able to find
- Problem: BI doesn't have all the features SRS does, such as last order date, last received date, last perpetual changed date, perpetual count, etc
- BI would have to approximate this information to the best of its ability - what couldn't be approximated would have to be scrapped

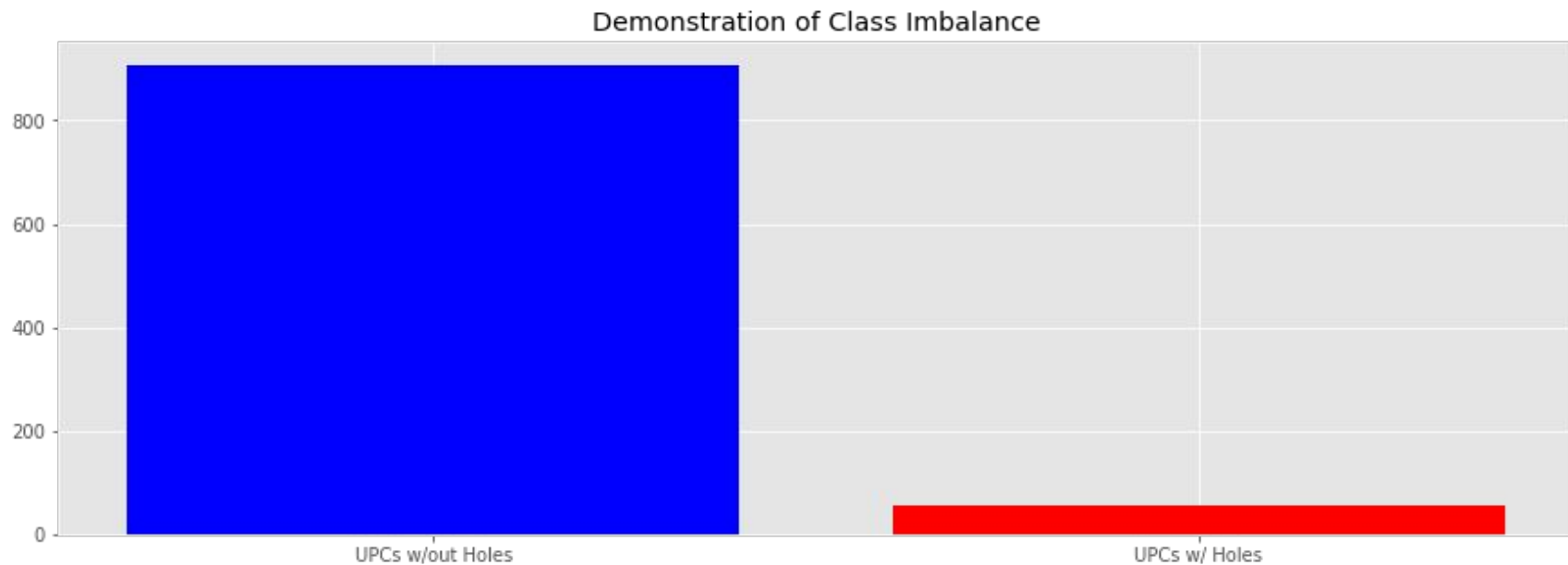


Methods

- Scan entire set, scan holes, then pull data from BI
- From BI:
 - Bill versus Scan for various time periods: 6 months, 3 months, and 7 days
 - Most recent 7 day sales histories for all items
- Unify data from all the reports by UPC to try and reverse engineer features from SRS
- Model train, test; reevaluate features; train, test, repeat



The Challenge



94%

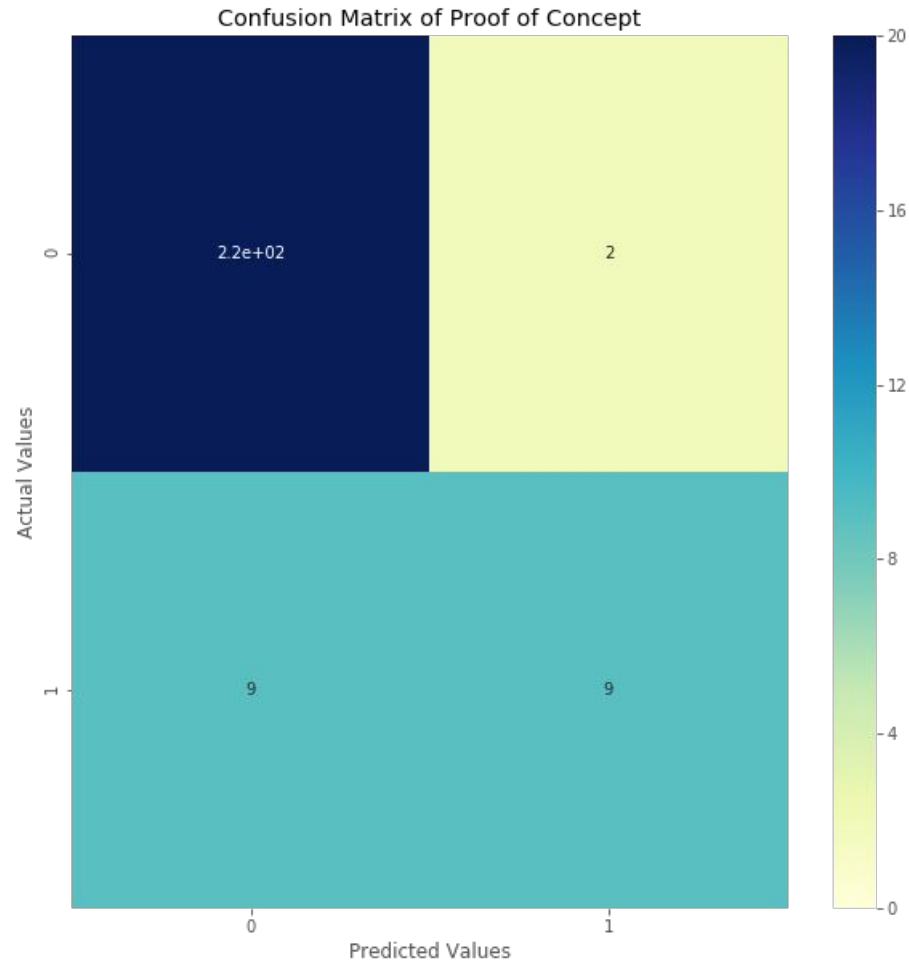
The baseline accuracy of the simplest model*

*the simplest model predicts that nothing is wrong

The model got to 95%

Model Result

- Overall 95% accuracy
- Able to identify 50-66% of shelf issues on cross validation
- Very minimal false positive rate - very little wasted time





Implications

- Faster, more reliable store walks
 - Managers can zero in on known priorities
 - Hourly partners can execute stocking basics such as working risers and backstock
- Improving store conditions
 - Driving sales by improving conditions
 - Driving sales by providing assortment
- Even a 0.5% lift to sales - just by improving sell through - can mean thousands of dollars in sales a week; hundreds of thousands of dollars in a year

Thank you
