AUSTIN URBAN DEVELOPMENT PROJECTION IN 2020

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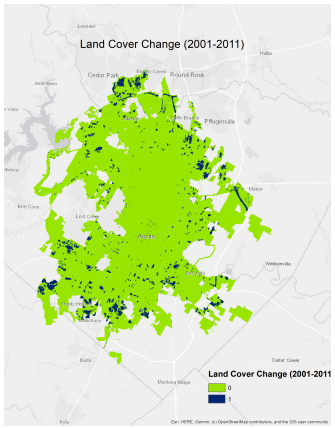
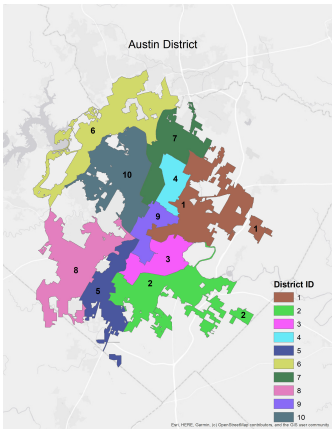
Austin, the Texas capital, had one of the highest rates in the nation for sprawl. This project aims to predict new development probability in 2020. The predicitive model was built based on the development from 2000 to 2010. For 2020, this project also analyzed demand / supply side as well as allocation strategy.

PREDICTING FOR 2010





This project firstly construct a binary logistic regression model that predicts change in development from 2001 to 2011. The mean accuracy with cross-validation is about 0.832. As the maps below show, this model is more accurate when predict developement happened far from central area.

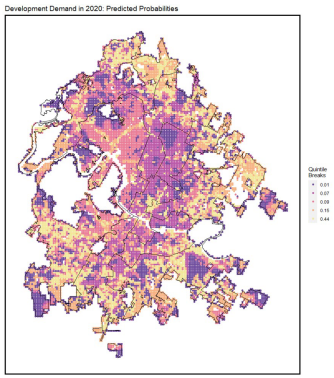
Old_Classification	New_Classification
Open Space as well as Low, Medium and High Intensity Development	Developed
Deciduous, Evergreen and Mixed Forest	Forest
Pasture/Hay and Cultivated Crops	Farm
Woody and Emergent Herbaceous Wetlands	Woodlands
Barren Land, Dwarf Scrub and Grassland/Herbaceous	Other Undeveloped
Water	Water

Independent Variables
Wetlands 2000
Forest 2000
Farm 2000
OtherUndeveloped 2000
Development Lag
Population Change 00 - 10
Distance from Highways
Distance from Commercial Area

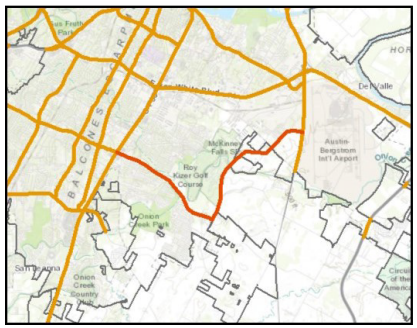
Demand-side Change

A model using 2010 data to predict development demand in 2020

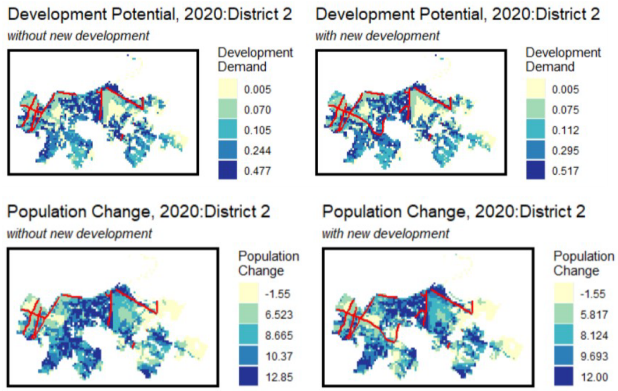
Variable	Sensitivity	Specificity	Accuracy
predClass_25	0.77	0.73	0.76
predClass_30	0.80	0.68	0.77
predClass_40	0.86	0.54	0.80
predClass_45	0.89	0.45	0.80
predClass_55	0.96	0.22	0.80
predClass_65	0.99	0.05	0.80



Supply-side Change



In this scenario, a new highway was planned in district 2. With this new highway, our model predicted less population while higher development potential in district 2.



Allocation

Allocation is the final stage of the urban growth modeling process.Planners and governors are supposed to allocate resources based on the condition of each district. District 1 and 2 are more suitable for 2020 urban growth compared with other districts.