In our town, there have been several instances of student drivers getting into crashes around their high school, including some fatalities. We did a public records request from the Town of Cary and after doing an ad-hoc analysis, we confirmed there is indeed a problem.

So at the crux of our solution is an app that takes a behavior modification approach (as opposed to a law enforcement approach) on the part of drivers; our motto says “Earning cash for driving safely paid by members that don’t.” Let me step you through it.

First thing you need to do after installing the app on your device (which is cross platform supported; so iPhone, Android, Windows Phone) is create an account. [SHOW ACCOUNT]

Behind the scenes we’re actually creating two accounts - one account that is persisted in our local database server (MongoDB) and the other in the Braintree vault. We’re not holding any credit card information on our server but holding a token that can link us to the Braintree vault when we need to do transactions.

From this point forward we have a two-way data workflow from the mobile device to our analytics server written in C# and F#. The mobile device pushes telemetry information (speed, geo location) to the server. At the same time, the mobile device periodically pulls from another server endpoint for feedback on the driver’s performance relative to the speed limits at their current geo-location. [SHOW FLAGS]

So the driver is getting real-time feedback on how they’re driving but not pictured on the phone is a server piece that sends notification email using SendGrid when the driver is accumulating an excessive number of speeding violations over a short period of time. This piece is also responsible for applying a small financial penalty deducted from the driver using the Braintree SDK.

Finally we have a dashboard page [SHOW DASHBOARD]. If a driver is consistently driving safely (i.e. little/no flags) once a week they can claim a portion of the entire accumulation of penalty fines divvied up from the unsafe drivers for that week.

The last thing I wanted to mention, was that not only do we help students drive safe, we use Machine Learning to predict individual driver behavior to help them avoid potential trouble.

So to summarize, the UI is written in Apache Cordova, the server side is written in C# and F#. The car telemetry is a massive amount of data and we are using AzureML and IBM Watson. We used Braintree, Paypal, Venmo, and SendGrid as well in this application.