

Changing the Future? Systemic Pedestrian Safety Analyses in Seattle, Washington

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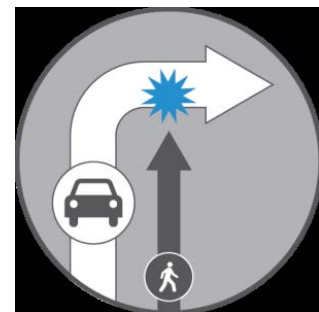
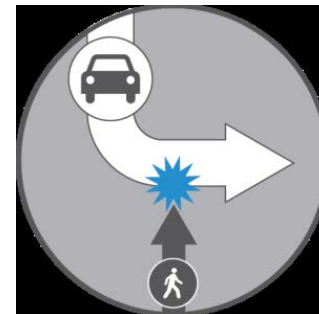
Research Purpose

- Go beyond crash hotspots to prioritize pedestrian treatments

- Systemic pedestrian safety analysis

- Properly account for exposure, RTM potential

➤ SPF Development and Application

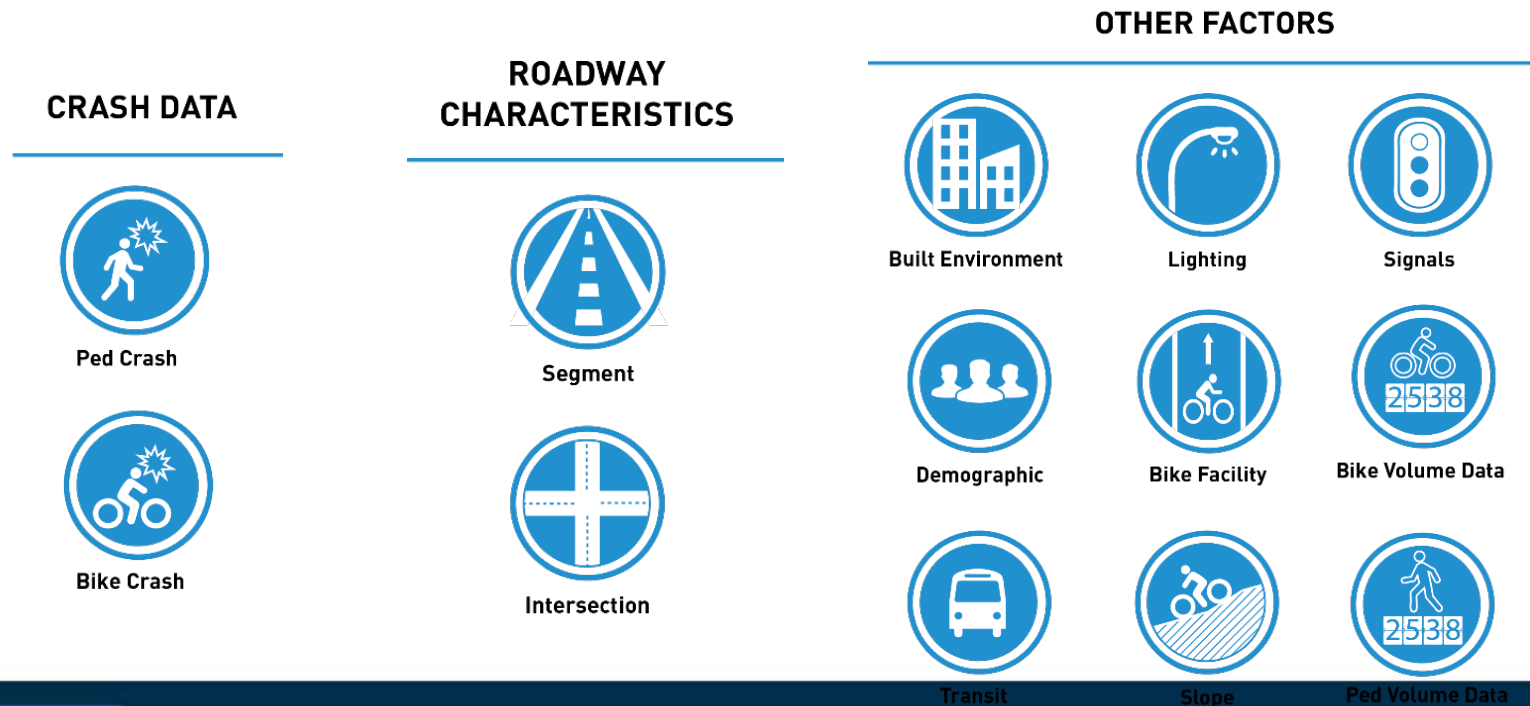


Data and Methods

SPF Development / Screening Application

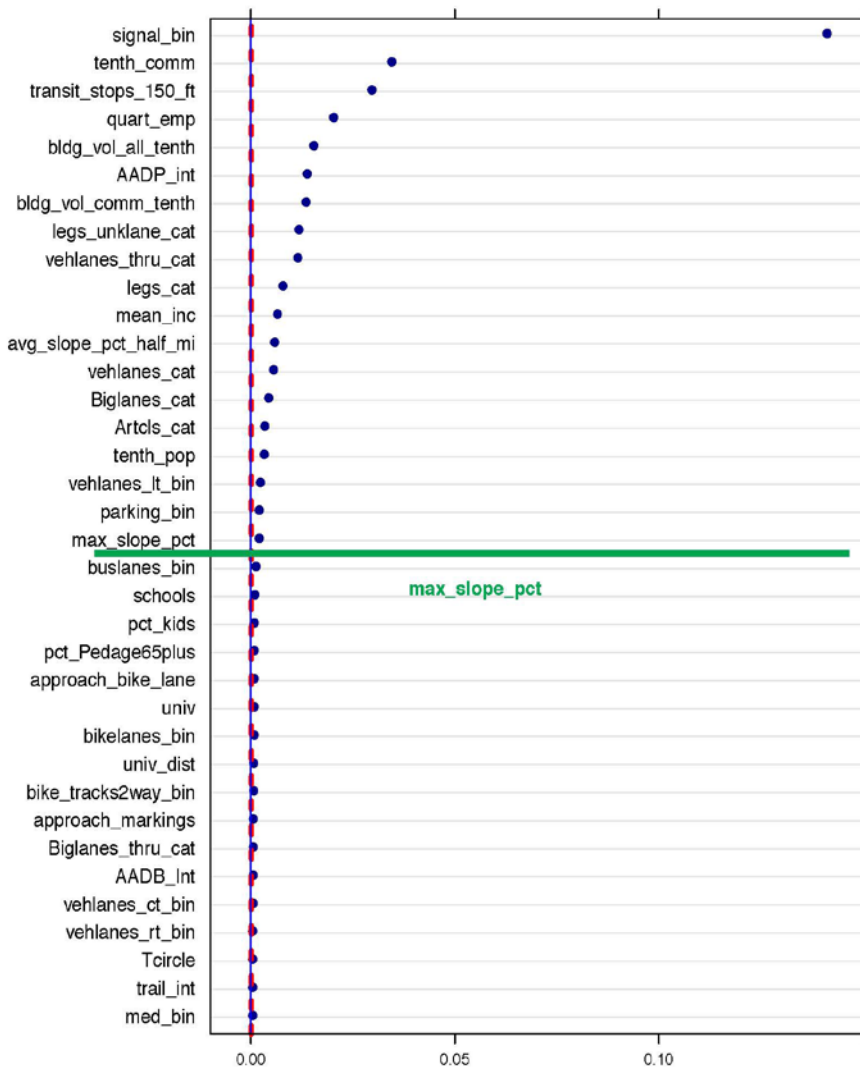
- 1) Conditional Random Forest (CRF) [R 'party' package]
- 2) NB Regression Modeling [SAS Proc Glimmix]
- 3) Predict/rank intersections – SPF, EB, PSI

8 years of crash data – two 'types' ped intersection crashes



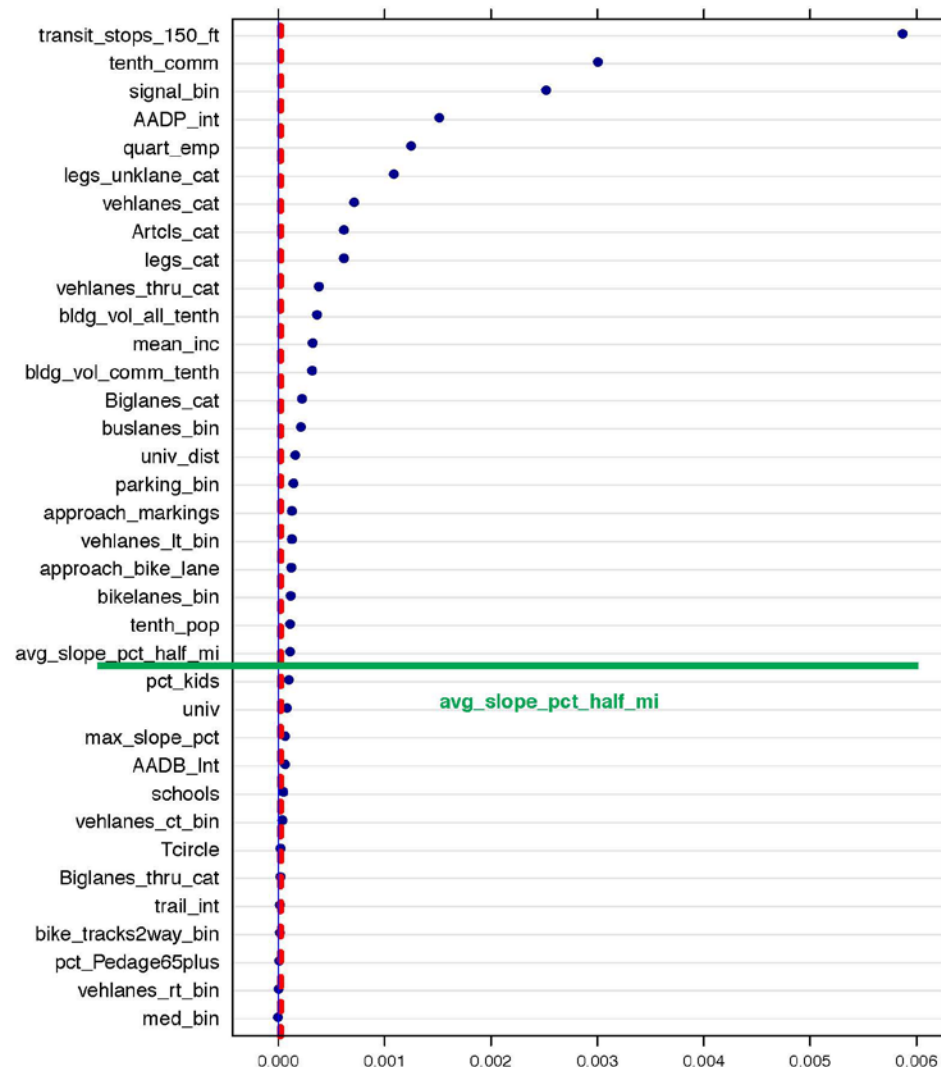
Key Findings – CRF anal.

Variable Importance–SEA Ptot_int



Variable Importance by cforest (predictors to right of dashed vertical line are significant)

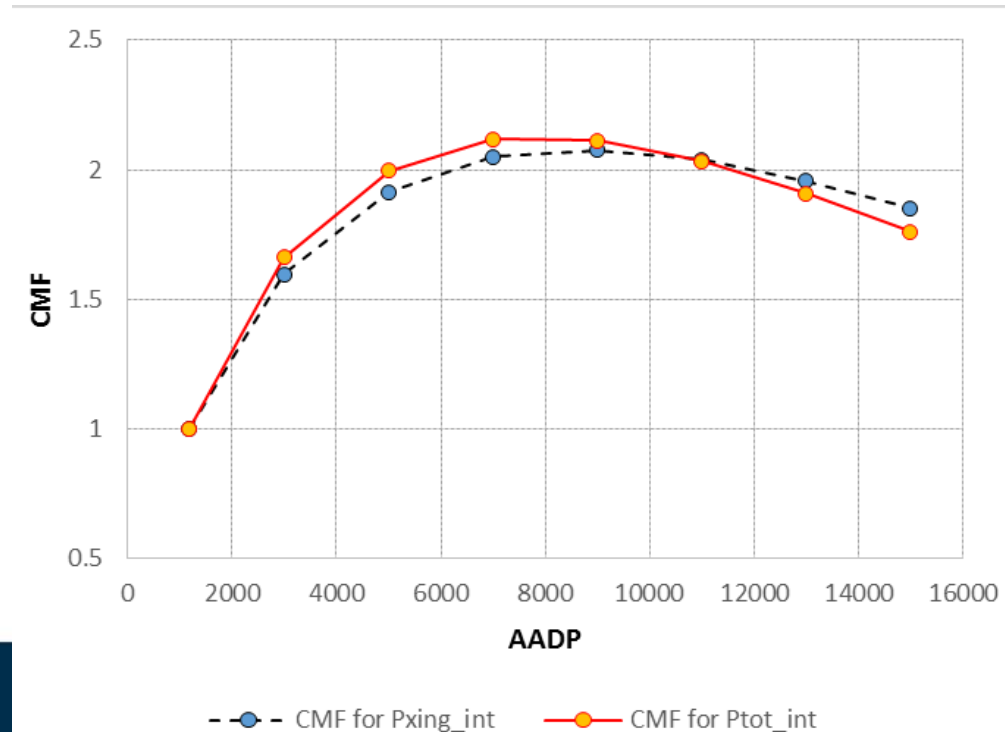
Variable Importance–SEA PXing_int



Variable Importance by cforest (predictors to right of dashed vertical line are significant)

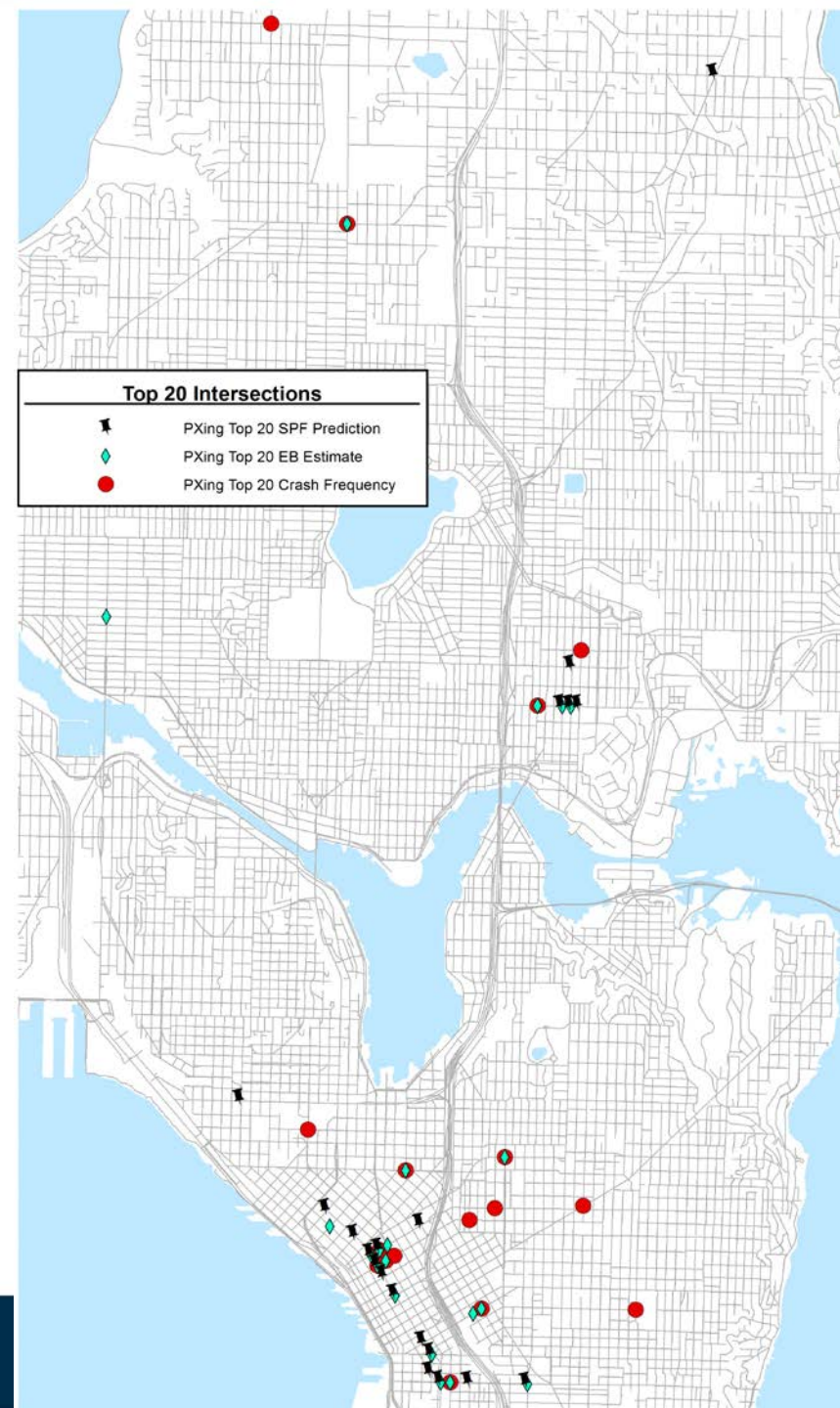
Key Findings – SPF Models

- Many significant predictors similar in both models:
 - Ped volume (AADP estimates), *AND* other measures of activity (commercial, transit)
 - Signals, intersection size, arterial class
 - Predictors affected by what is not there (e.g. AADT)
- AADP exhibited curved relationship to crashes
- Predictions need validating with new data



Ready for Prime Time?

- Stop chasing crash hotspots that may be random
- Identify locations with few or no prior crashes based on network-wide (systemic) risk
- Data needs - User volume / activity and other data types (signal phasing, speeds, turn movements, etc.)
- Partnerships with researchers – skill set needed



Future Research Needs

- Need to count / accurately sample people and cars (or identify better measures of exposure)
- Test interactions of variables
- Generalizability: Are risk factors similar in different environments?
- Other unmeasured risks (e.g. signal operations, traffic speed)
- Disaggregate analyses by crash type – may help with countermeasures linkage
- Better way to handle endogenous risks? (e.g. light conditions, weather, behaviors at time of crash)