

Data Science

Final Project Proposals

Neal Patel

Lifetime Value

Problem Statement:

ClassPass Customer Experience associates regularly provide our users with fee waivers, free classes and other “offers”. Their decision is not informed by any robust data-points such as customer LTV.

Hypothesis:

Taking customer-specific LTV into account can dramatically improve the efficiency with which money is spent on providing users with offers as measured by \$ / user.

Available Data:

- Reservation patterns
 - Reservation volume
 - Locations
 - Time
- Subscription details
 - Plan type / switches
 - Cycles on CP
 - Price
 - LTV
- Acquisition / Marketing
 - Acquisition Channel
 - Promo user (yes/no)
 - Promo type
 - Promo value
 - CAC / market
- Usage Patterns
 - Missed Classes
 - Early / Late Cancelled Classes
 - # of and type of Class searches
- User Experience
 - Sold out classes
 - Popularity of Classes
 - Cost of Classes outside CP
 - Classes Cancelled by Studio
 - # of CX incidents

Churn Prediction

Problem Statement:

Users occasionally cancel their CP membership. Minimizing the incidence of these cancellations is critical to ensuring we don't reach market saturation sooner than necessary. Knowing if a user will churn in 30 days can enable proactive campaigns to reduce this risk.

Hypothesis:

Dramatic changes in a users behavior (log-ins, reservations, etc.) can accurately predict if a user is going to churn in the next 30 days.

Available Data:

- Reservation patterns
 - Reservation volume
 - Locations
 - Time
- Subscription details
 - Plan type / switches
 - Cycles on CP
 - Price
- Acquisition / Marketing
 - Acquisition Channel
 - Promo user (yes/no)
 - Promo type
 - Promo value
 - CAC / market
- Usage Patterns
 - Missed Classes
 - Early / Late Cancelled Classes
 - # of and type of Class searches
- User Experience
 - Sold out classes
 - Popularity of Classes
 - Cost of Classes outside CP
 - Classes Cancelled by Studio
 - # of CX incidents
 - Churned (Yes / No)

International Trade

Problem Statement:

Foreign direct investment and attracting global businesses are key to driving economic growth. Portfolio theory states to reduce risk, diversification is key. At odds with this is Riccardo's theory of specialization. Assuming fixed resources in any given year, should nations focus vertically or horizontally?

Hypothesis:

Specialization should be pursued only if a nation is able to capture enough market share to become a price maker, otherwise exogenous prices will increase volatility and thus risk.

Available Data:

- World Bank
 - GDP Growth Rates
 - Foreign Direct Investments
- Economist
 - Democracy index
- Correlates of War
 - Historical War Data
 - Bi-lateral trade data
- United Nations ECOSOC
 - Industry Concentration
 - Population
 - GDP / Capita
 - Gini Coefficient
 - Poverty Rate
 - Labor force
 - Natural Resources
- Bloomberg
 - Historical Commodities Indices
 - Industry Indices
- World Trade Organization
 - Annual Trade Volume