Project Presentation
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Domain: Match History in Dota 2

- Teams of 5 players, each choose unique hero

- Heroes fulfill certain roles (support, carry, initiator etc)

- Aggregate match statistics recorded for last two years (kills, deaths, income etc)

- Analyzing pick strategy (colloquially meta-game) to increase win chance is a common task – highly competitive

Previous Approaches

- Dotabuff.com provides access to the raw s

- Large number of community projects using machine learning and visualization

- Experts aggregate stats into hero tier list

HERO	P+B	PICK	BAN	WIN	LOSE	WIN%	P+B %	
	573	203	370	113	90	55	93.1	▲1
	554	155	399	72	83	46	90.0	
	550	119	431	74	45	62	89.4	
	462	166	296	83	83	50	75.1	▲1
	431	276	155	145	131	52	70.0	
	408	151	257	75	76	49	66.3	
	371	208	163	109	99	52	60.3	▲2
	344	149	195	66	82	44	55.9	▼1
	341	159	182	88	71	55	55.4	▲1
	340	157	183	81	76	51	55.2	▼1
	313	200	113	90	110	45	50.8	▼1
	303	206	97	99	107	48	49.2	
	299	159	140	82	77	51	48.6	
	289	99	190	46	53	46	46.9	
	249	81	168	36	45	44	40.4	▲1
	223	64	159	34	30	53	36.2	
	220	107	113	52	55	48	35.7	
	219	133	86	82	51	61	35.6	▲1
	217	115	102	55	60	47	35.2	
	203	102	101	61	41	59	33.0	▲2
	203	123	80	56	67	45	33.0	
	199	107	92	45	62	42	32.3	▲1
	193	100	93	48	52	48	31.3	
	193	120	73	63	57	52	31.3	
	189	91	98	52	39	57	30.7	▲1

Problems

- Dotabuff provides little useful framing and visualization for the statistics

- Tier lists only provide snapshots of the meta no trend analysis possible

- Most machine learning tools don't appeal to wide audience

Project Goals

- Provide analysis tool usable by a mass audience

- Understand how quickly the Dota 2 Meta Game changes, and what factors cause shifts

- Improve tier lists with trend understanding and dynamically updated data

- Link tier lists with an understanding of the factors causing certain heroes to be strong

Dota 2 Meta Search

- Juxtaposed overview + detail
- Utilizes several visualizations well known fo
  mass audience appeal
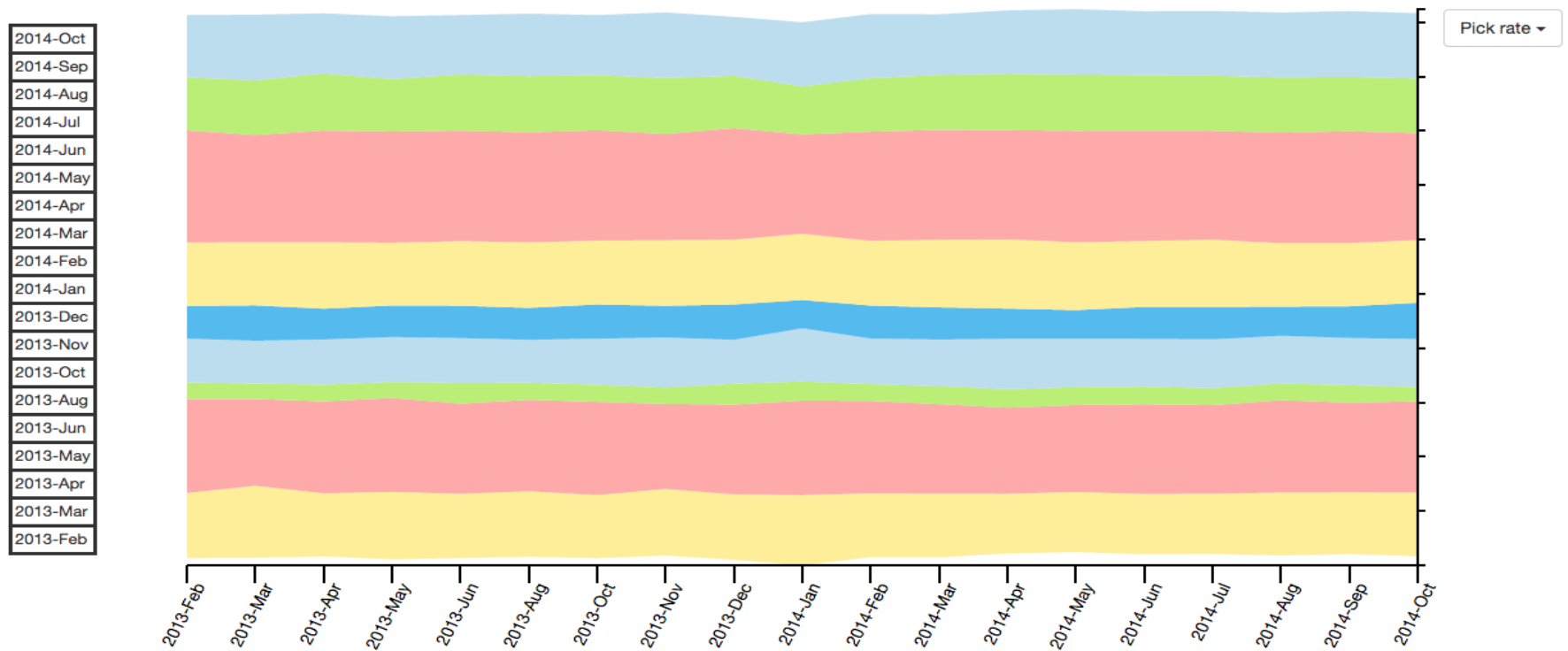
Task Definitions

- Identify trends of interest in hero pick strate
- Drill down into detailed statistics to understa why trends occurred
- Identify anomalies that may correspond to improper hero balancing

Overview: Pick Stream-graph

- Displays aggregate trends in one stat
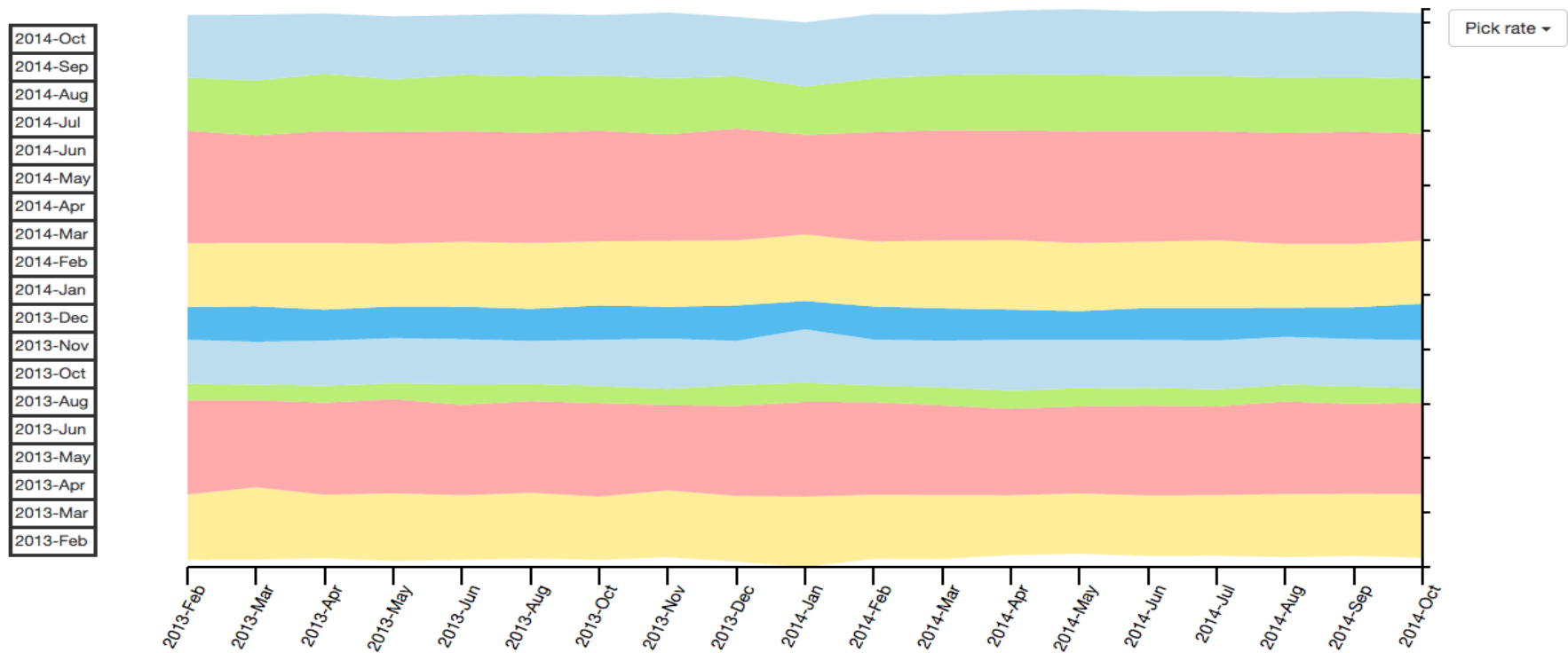- Displays stats for all roles or a specific role
- Allow filtering, link to juxtaposed details

Encoding Decisions – Stream-graph

- Hue used categorically, low contrast for large areas to avoid distraction

- Transitions between statistics animated to improve tracking of items

- Clicks provide details on demand via a side bar and updating the filters in the detail view

- Proven to provide useful framework for mass audience trend discussion

Detail View: Role Statistics

- Small multiples scatter plot matrix of all mat statistics for all heroes in a role

- Hero at consistent position along X axis

- Uses linked highlighting and interaction to investigate anomalies and trends
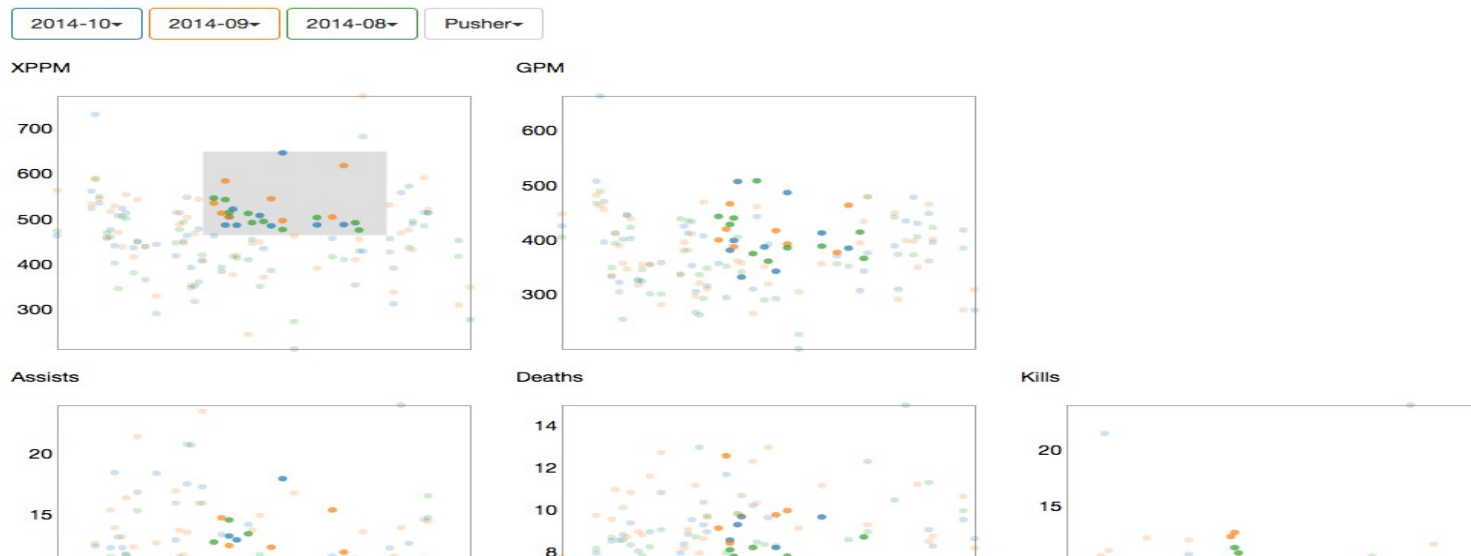
Encoding Decisions - SPLOM

- Hue used categorically, high contrast to increase discriminability

- Dot opacity used to create pop-out for selected nodes

- Some details on demand (hover tooltips to get exact dot data)

- Similar scale statistics encoded on each row of the SPLOM to increase comparability

Demo Time!

Results

- Need a point about how people reacted

- Discovered that while specific hero selection
  varies on a month by month basis, the over
  roles are very consistent

- Found a number of interesting anomalies a
  shifts in the meta game (new heroes,
  halloween event etc)

Future Work

- Investigate how player skill level affects the results (the competitive meta might shift mo quickly)

- Create visualizations for item and skill choi

- Improve validation with a full user study

- Integrate with previous tools (e.g. put on dotabuff)