

Quantifying NHL Player Chemistry

Chicago Blackhawks – 5v5 Expected Goals

Executive Summary

Quantifies chemistry as **interaction effects**, not production.

Controls for individual player talent using **5v5 xGD60 baselines**.

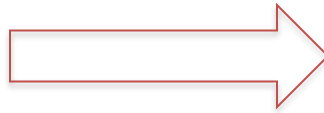
Chemistry = **Observed performance** minus **Expected performance**.

Highlights which units **outperform** or **underperform** expectations.

Designed for **lineup** and **deployment** decisions.

Methodology

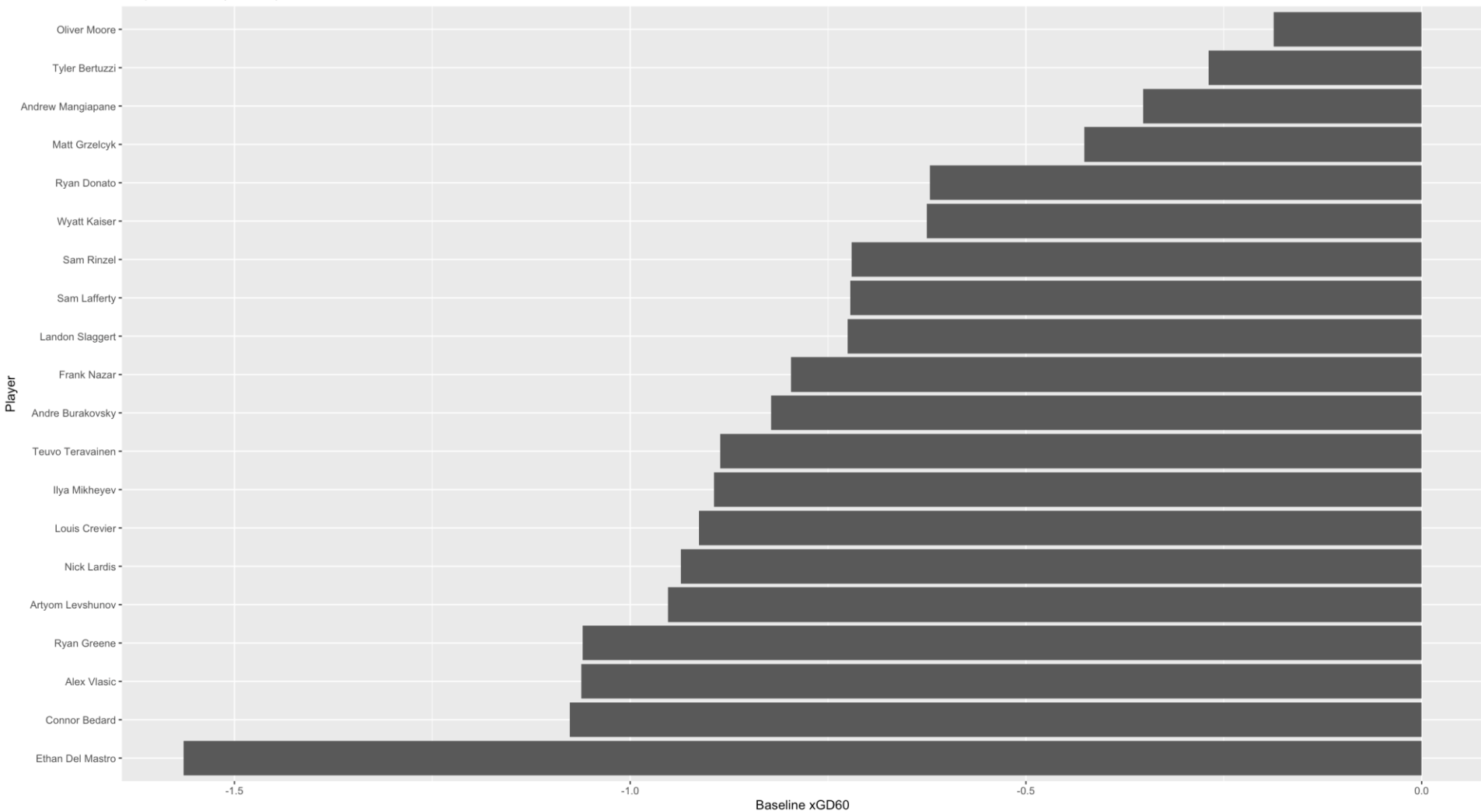
Player baselines
derived from
individual 5v5 on-ice
xGD60.



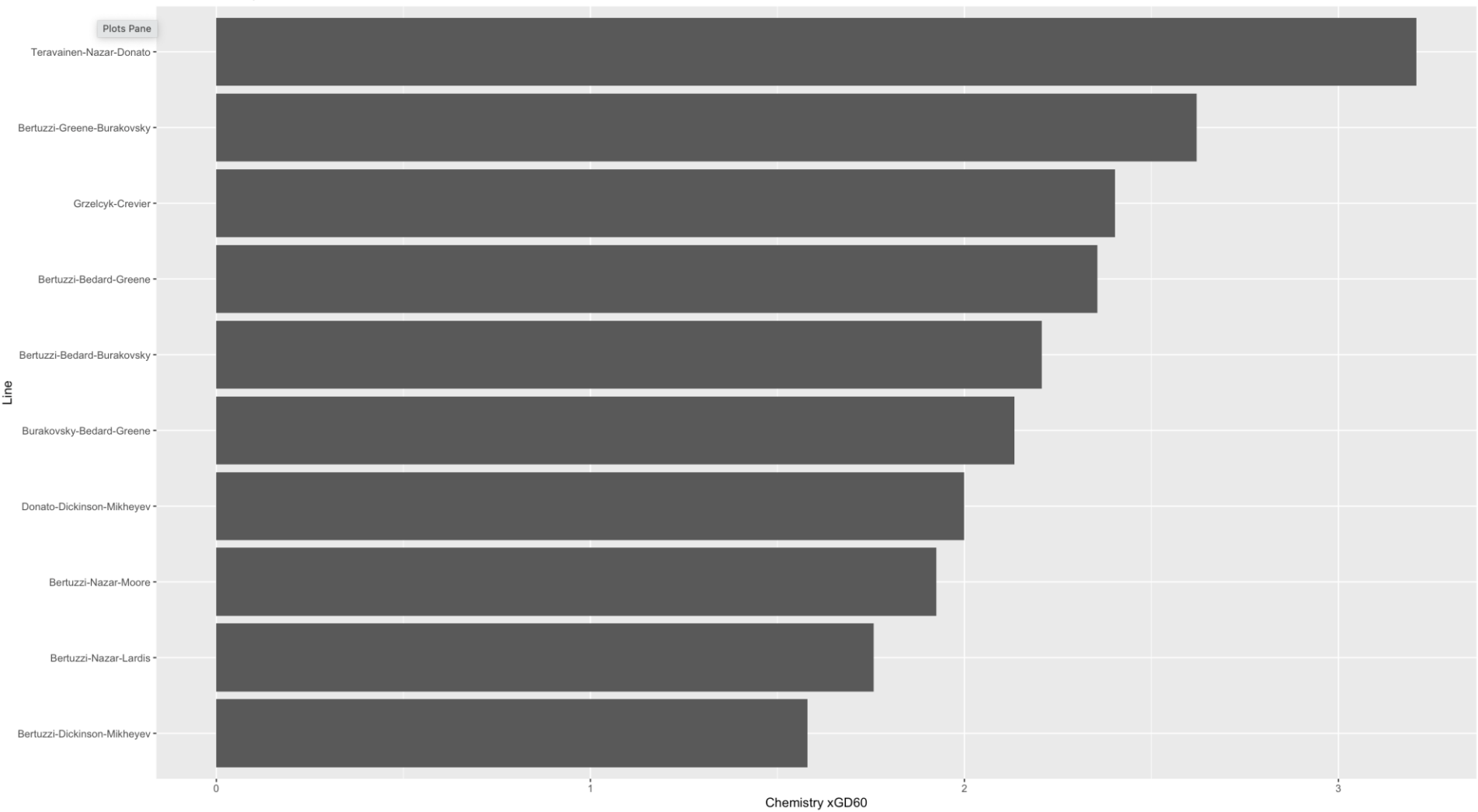
Expected unit
performance is the sum
of player baselines.

- Observed performance from actual on-ice results.
- Residual is defined as chemistry (interaction effect).

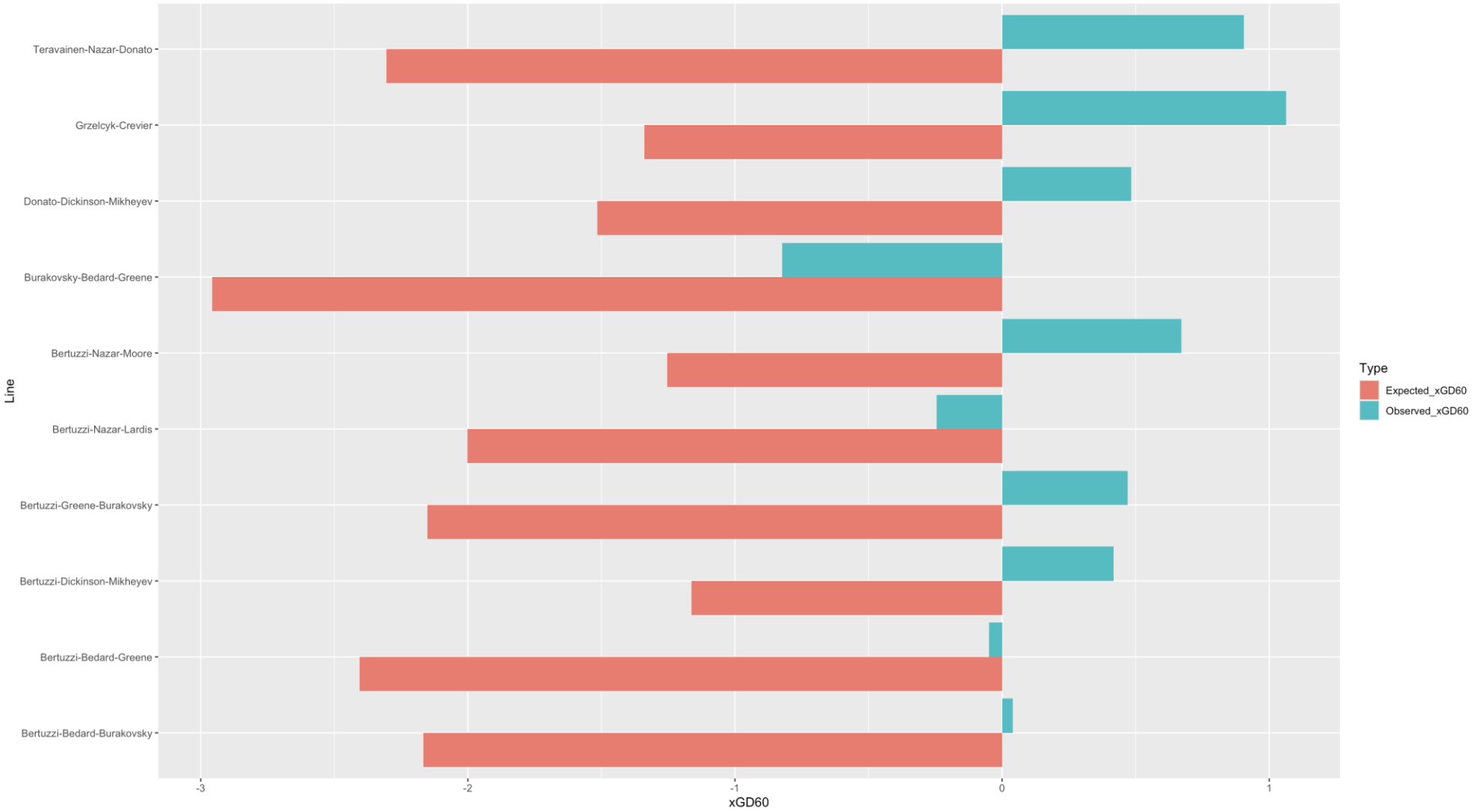
Player Impact (xGD60)



Line Chemistry Impact



Observed vs Expected xGD60



Top Chemistry Units

Teravainen-Nazar-Donato: +3.21 xGD6o (45 mins)

Bertuzzi-Greene-Burakovsky: +2.62 xGD6o (76 mins)

Grzelcyk-Crevier: +2.40 xGD6o (94 mins)

Bertuzzi-Bedard-Greene: +2.36 xGD6o (61 mins)

Bertuzzi-Bedard-Burakovsky: +2.21 xGD6o (74 mins)

Lowest Chemistry Units

Del Mastro-Rinzel: $-0.82 \times \text{GD60}$ (30 mins)

Burakovsky-Bedard-Dach: $-0.81 \times \text{GD60}$ (48mins)

Slaggert-Foligno-Dach: $-0.07 \times \text{GD60}$ (89 mins)

Levshunov-Vlasic: $-0.06 \times \text{GD60}$ (204 mins)

Grzelcyk-Murphy: $-0.02 \times \text{GD60}$ (356 mins)

Deployment Recommendations (Core)

Teravainen-Nazar-Donato: +3.21 xGD6o

Bertuzzi-Greene-Burakovsky: +2.62 xGD6o

Grzelcyk-Crevier: +2.40 xGD6o

Kaiser-Rinzel: +1.20 xGD6o

Vlasic-Murphy: +0.50 xGD6o

How to Use This

- Keep high-chemistry units together longer.
- Use negative chemistry to guide experimentation.
- Always pair with video and coaching insight.
- Update as sample sizes grow.

Appendix 1

name	Minutes	Observed_xGF60	Observed_xGA60	Observed_xGD60
Bertuzzi-Nazar-Lardis	36.667	2.945	3.191	-0.245
Donato-Dach-Mikheyev	39.433	1.4	2.45	-1.05
Levshunov-Kaiser	430.4	2.292	3.064	-0.772
Teravainen-Nazar-Moore	51.683	2.09	2.867	-0.778
Bertuzzi-Bedard-Greene	61.433	3.457	3.506	-0.049
Mangiapane-Donato-Mikheyev	53.4	1.798	2.427	-0.629
Bertuzzi-Nazar-Burakovsky	39.517	2.278	3.234	-0.957
Teravainen-Dickinson-Mikheyev	89.7	1.579	3.01	-1.431
Bertuzzi-Greene-Burakovsky	76.65	3.843	3.374	0.47
Slaggert-Foligno-Dach	89.65	2.262	3.059	-0.796
Lardis-Moore-Teravainen	57.783	1.62	2.149	-0.53
Bertuzzi-Nazar-Moore	65.2	2.153	1.482	0.672
Kaiser-Crevier	191.217	1.902	3.445	-1.544
Grzelcyk-Murphy	356.567	2.164	2.61	-0.446
Bertuzzi-Dickinson-Mikheyev	106.45	2.514	2.097	0.417
Levshunov-Vlasic	204.683	1.917	3.99	-2.072
Donato-Dickinson-Mikheyev	184.85	2.639	2.155	0.484
Bertuzzi-Bedard-Burakovsky	74.75	2.962	2.922	0.04
Del Mastro-Rinzel	30.017	1.199	2.738	-1.539
Kaiser-Rinzel	251.833	2.433	2.583	-0.15
Teravainen-Nazar-Donato	45.083	2.449	1.544	0.905
Grzelcyk-Levshunov	362.933	2.324	2.92	-0.595
Vlasic-Crevier	663.317	2.211	2.906	-0.696
Kaiser-Murphy	220.967	1.675	1.749	-0.073
Vlasic-Murphy	168.15	1.766	2.326	-0.56
Burakovsky-Bedard-Dach	48.267	1.218	3.928	-2.71
Vlasic-Rinzel	195.05	1.643	2.609	-0.966
Grzelcyk-Crevier	94.167	3.422	2.358	1.064
Bertuzzi-Nazar-Bedard	39.283	2.276	4.139	-1.863
Grzelcyk-Rinzel	149.217	2.336	3.366	-1.029
Burakovsky-Bedard-Greene	360.633	2.432	3.256	-0.824
Lardis-Moore-Greene	42.333	1.885	2.948	-1.063
Bertuzzi-Nazar-Teravainen	206.25	2.214	3.124	-0.911
Lardis-Moore-Donato	32.483	2.18	3.528	-1.348

Appendix 2

name	position	Minutes	xGF60	xGA60	Baseline_xGD60
Oliver Moore	C	572.25	2.204	2.391	-0.187
Tyler Bertuzzi	L	1096.917	2.621	2.89	-0.269
Andrew Mangiapane	L	713.417	2.062	2.414	-0.352
Matt Grzelcyk	D	1046.583	2.411	2.837	-0.426
Ryan Donato	C	1010.95	2.113	2.735	-0.621
Wyatt Kaiser	D	1252.367	2.139	2.764	-0.625
Sam Rinzel	D	774.467	2.168	2.889	-0.72
Sam Lafferty	C	229.317	1.272	1.994	-0.722
Landon Slaggert	L	476.733	1.882	2.606	-0.725
Frank Nazar	C	848.183	2.236	3.033	-0.797
Andre Burakovsky	L	982.05	2.412	3.234	-0.822
Teuvo Teravainen	C	883.55	1.982	2.868	-0.886
Ilya Mikheyev	R	1053.233	2.079	2.973	-0.894
Louis Crevier	D	1097.667	2.198	3.111	-0.913
Nick Lardis	L	400.633	1.918	2.854	-0.936
Artyom Levshunov	D	1062.067	2.26	3.212	-0.952
Ryan Greene	C	1036.05	2.358	3.419	-1.06
Alex Vlasic	D	1371.7	2.036	3.098	-1.062
Connor Bedard	C	1068.367	2.394	3.47	-1.076
Ethan Del Mastro	D	207.133	1.596	3.16	-1.564

Appendix 3

Unit	Minutes	Observed_xGD60	Expected_xGD60	Chemistry_xGD60
Teravainen-Nazar-Donato	45.083	0.905	-2.304	3.209
Bertuzzi-Greene-Burakovsky	76.65	0.47	-2.151	2.621
Grzelcyk-Crevier	94.167	1.064	-1.339	2.403
Bertuzzi-Bedard-Greene	61.433	-0.049	-2.405	2.356
Bertuzzi-Bedard-Burakovsky	74.75	0.04	-2.167	2.207
Burakovsky-Bedard-Greene	360.633	-0.824	-2.958	2.134
Donato-Dickinson-Mikheyev	184.85	0.484	-1.515	1.999
Bertuzzi-Nazar-Moore	65.2	0.672	-1.253	1.925
Bertuzzi-Nazar-Lardis	36.667	-0.245	-2.002	1.757
Bertuzzi-Dickinson-Mikheyev	106.45	0.417	-1.163	1.58
Lardis-Moore-Teravainen	57.783	-0.53	-2.009	1.479
Vlasic-Crevier	663.317	-0.696	-1.975	1.279
Mangiapane-Donato-Mikheyev	53.4	-0.629	-1.867	1.238
Kaiser-Rinzel	251.833	-0.15	-1.345	1.195
Lardis-Moore-Greene	42.333	-1.063	-2.183	1.12
Teravainen-Nazar-Moore	51.683	-0.778	-1.87	1.092
Bertuzzi-Nazar-Teravainen	206.25	-0.911	-1.952	1.041
Bertuzzi-Nazar-Burakovsky	39.517	-0.957	-1.888	0.931
Vlasic-Rinzel	195.05	-0.966	-1.782	0.816
Levshunov-Kaiser	430.4	-0.772	-1.577	0.805
Grzelcyk-Levshunov	362.933	-0.595	-1.378	0.783
Kaiser-Murphy	220.967	-0.073	-0.625	0.552
Vlasic-Murphy	168.15	-0.56	-1.062	0.502
Donato-Dach-Mikheyev	39.433	-1.05	-1.515	0.465
Lardis-Moore-Donato	32.483	-1.348	-1.744	0.396
Teravainen-Dickinson-Mikheyev	89.7	-1.431	-1.78	0.349
Bertuzzi-Nazar-Bedard	39.283	-1.863	-2.142	0.279
Grzelcyk-Rinzel	149.217	-1.029	-1.146	0.117
Kaiser-Crevier	191.217	-1.544	-1.538	-0.006
Grzelcyk-Murphy	356.567	-0.446	-0.426	-0.02
Levshunov-Vlasic	204.683	-2.072	-2.014	-0.058
Slaggert-Foligno-Dach	89.65	-0.796	-0.725	-0.071
Burakovsky-Bedard-Dach	48.267	-2.71	-1.898	-0.812
Del Mastro-Rinzel	30.017	-1.539	-0.72	-0.819

Q&A
