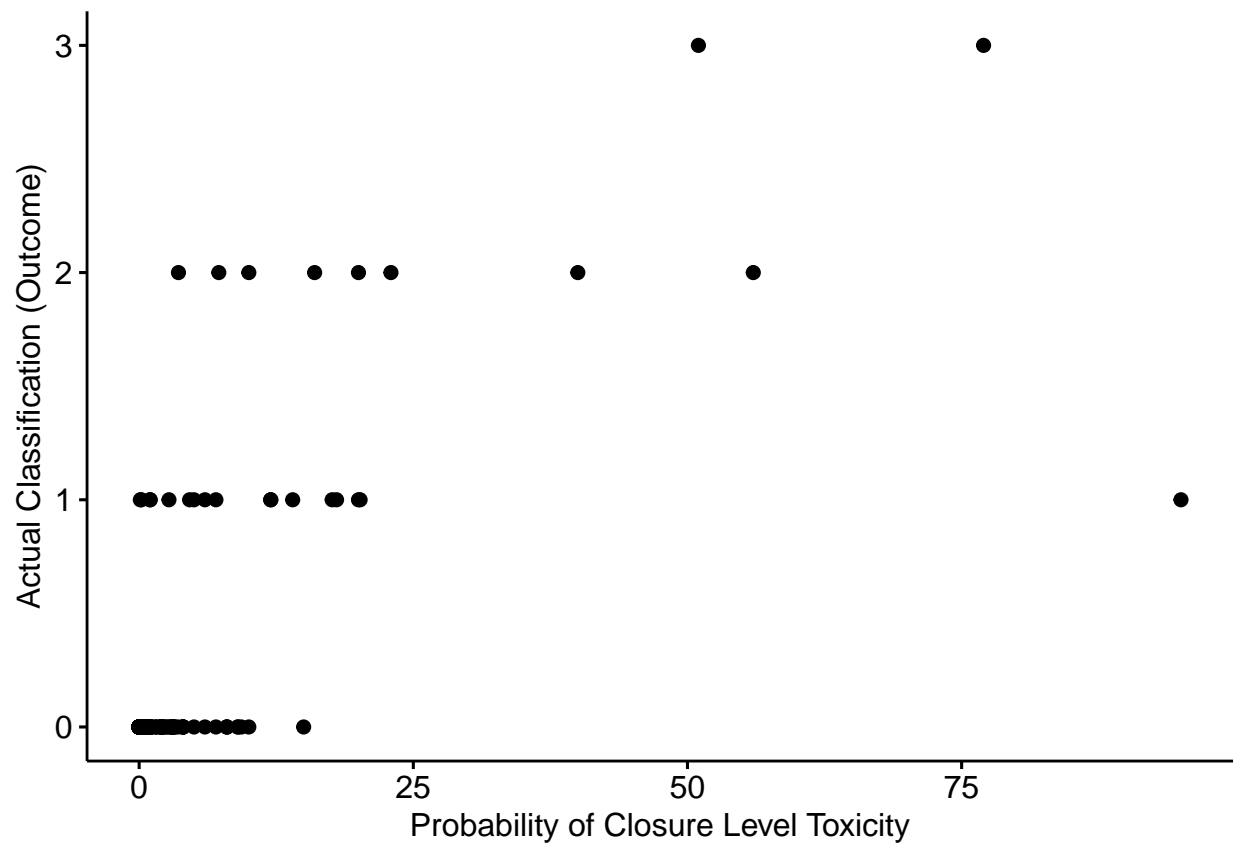
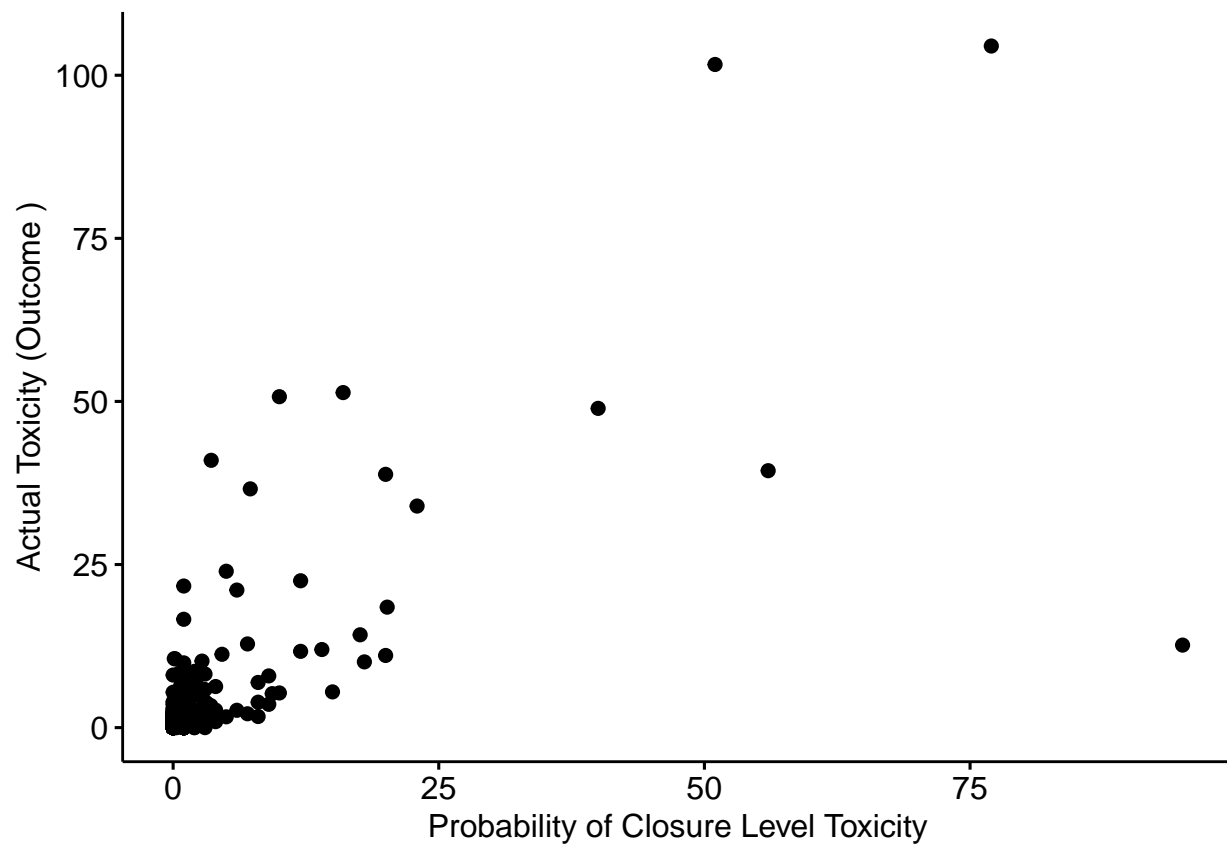


paper figures and questions

Johnathan Evanilla

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closure-level toxicity predictions

```
## # A tibble: 5 x 5
##   location date      predicted_class prob_3 actual_class
##   <chr>   <date>          <dbl>   <dbl>      <dbl>
## 1 PSP12.28 2021-05-03           3      51         3
## 2 PSP12.28 2021-05-11           3      77         3
## 3 PSP12.28 2021-05-16           3      56         2
## 4 PSP12.15 2021-05-17           3      40         2
## 5 PSP12.15 2021-05-24           3      95         1
```

closure-level toxicity measurements in HPLC data

```
##      id      location_id      date      species
## Length:592 Length:592 Min. :2014-05-20 Length:592
## Class :character Class :character 1st Qu.:2015-05-19 Class :character
## Mode :character Mode :character Median :2017-06-11 Mode :character
## Mean :2017-03-14
## 3rd Qu.:2019-05-12
## Max. :2021-05-16
## total_toxicity gtx4 gtx1 dcgtx3
## Min. : 80.05 Min. : 0.00 Min. : 0.00 Min. :0.0000
## 1st Qu.: 101.66 1st Qu.: 12.19 1st Qu.: 21.29 1st Qu.:0.0000
## Median : 134.95 Median : 19.59 Median : 32.89 Median :0.0000
## Mean : 232.59 Mean : 28.32 Mean : 51.28 Mean :0.1331
## 3rd Qu.: 224.91 3rd Qu.: 31.77 3rd Qu.: 51.87 3rd Qu.:0.0000
## Max. :3092.83 Max. :342.39 Max. :817.63 Max. :8.5389
## gtx5 dcgtx2 gtx3 gtx2
## Min. :0.00000 Min. :0.0000 Min. : 0.7691 Min. : 0.00
## 1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.: 21.4520 1st Qu.: 10.10
## Median :0.00000 Median :0.0000 Median : 30.1984 Median : 16.33
## Mean :0.06479 Mean :0.1163 Mean : 47.0168 Mean : 26.85
## 3rd Qu.:0.00000 3rd Qu.:0.0000 3rd Qu.: 47.3505 3rd Qu.: 26.65
## Max. :3.30789 Max. :9.1901 Max. :851.0142 Max. :506.66
## neo dcstx stx c1
## Min. : 0.00 Min. : 0.000 Min. : 0.00 Min. :0.00000
## 1st Qu.: 13.80 1st Qu.: 0.000 1st Qu.: 10.48 1st Qu.:0.00000
## Median : 21.39 Median : 0.000 Median : 19.25 Median :0.00000
## Mean : 39.01 Mean : 1.348 Mean : 37.02 Mean :0.05005
## 3rd Qu.: 37.55 3rd Qu.: 0.000 3rd Qu.: 40.27 3rd Qu.:0.00000
## Max. :606.36 Max. :433.810 Max. :615.53 Max. :0.95717
## c2 year doy week
## Min. : 0.0000 Min. :2014 Min. :119.0 Min. :17.00
## 1st Qu.: 0.0000 1st Qu.:2015 1st Qu.:153.0 1st Qu.:22.00
## Median : 0.8293 Median :2017 Median :167.0 Median :24.00
## Mean : 1.3782 Mean :2017 Mean :168.2 Mean :24.32
## 3rd Qu.: 1.7908 3rd Qu.:2019 3rd Qu.:186.2 3rd Qu.:27.00
## Max. :22.9598 Max. :2021 Max. :215.0 Max. :31.00
```

species breakdown of closure-level toxicity measurements

```
## # A tibble: 8 x 2
##   species      n
##   <chr>    <int>
## 1 mytilus   466
## 2 mya       51
## 3 arctica   39
## 4 crassostrea 21
## 5 spisula    5
## 6 ensis      4
## 7 mercenaria 4
## 8 ostrea     2
```

Seasonal perspective of closure-level (toxic) samples in HPLC data

```
## # A tibble: 9 x 4
##   year toxic_samples toxic_stations highest_sample
##   <dbl>         <int>         <int>         <dbl>
## 1  2014             147             56             803.
## 2  2015              20              8             447.
## 3  2016              32             15             343.
## 4  2017             199             60            3093.
## 5  2018              37             16             282.
## 6  2019             150             62            3069.
## 7  2020               5              3             239.
## 8  2021               2              1             104.
## 9  2022              0              0             -Inf
```

Seasonal perspective of closure-level (toxic) samples in all PSP data (HPLC and mouse)

##	year	toxic_samples	toxic_stations	highest_sample
## 1	1975	300	47	4315.0000
## 2	1976	219	43	1845.0000
## 3	1977	176	42	19074.0000
## 4	1978	596	97	15425.0000
## 5	1979	509	74	9075.0000
## 6	1980	671	99	18474.0000
## 7	1981	393	75	13555.0000
## 8	1982	239	58	3410.0000
## 9	1983	259	52	2854.0000
## 10	1984	434	77	4141.0000
## 11	1985	154	35	2350.0000
## 12	1986	713	84	9587.0000
## 13	1987	280	58	18444.0000
## 14	1988	356	67	4153.0000
## 15	1989	574	95	7217.0000
## 16	1990	291	68	3060.0000
## 17	1991	120	34	753.0000
## 18	1992	47	16	669.0000
## 19	1993	228	52	4058.0000
## 20	1994	50	26	1018.0000
## 21	1995	157	33	1200.0000
## 22	1996	5	1	443.0000
## 23	1997	5	5	276.0000
## 24	1998	15	8	476.0000
## 25	1999	2	1	146.0000
## 26	2000	100	32	1857.0000
## 27	2001	54	16	1246.0000
## 28	2002	12	6	509.0000
## 29	2003	126	33	3845.0000
## 30	2004	205	61	7827.0000
## 31	2005	262	65	4191.0000
## 32	2006	104	42	1164.0000
## 33	2007	69	27	489.0000
## 34	2008	199	55	1362.0000
## 35	2009	331	80	7986.0000
## 36	2010	67	26	1198.0000
## 37	2011	103	31	1337.0000
## 38	2012	156	35	563.6400
## 39	2013	27	6	222.9744
## 40	2014	147	56	803.1808
## 41	2015	20	8	447.2490
## 42	2016	32	15	343.4150
## 43	2017	199	60	3092.8320
## 44	2018	37	16	281.9716
## 45	2019	150	62	3068.8900
## 46	2020	5	3	239.1684
## 47	2021	2	1	104.4803
## 48	2022	0	0	-Inf