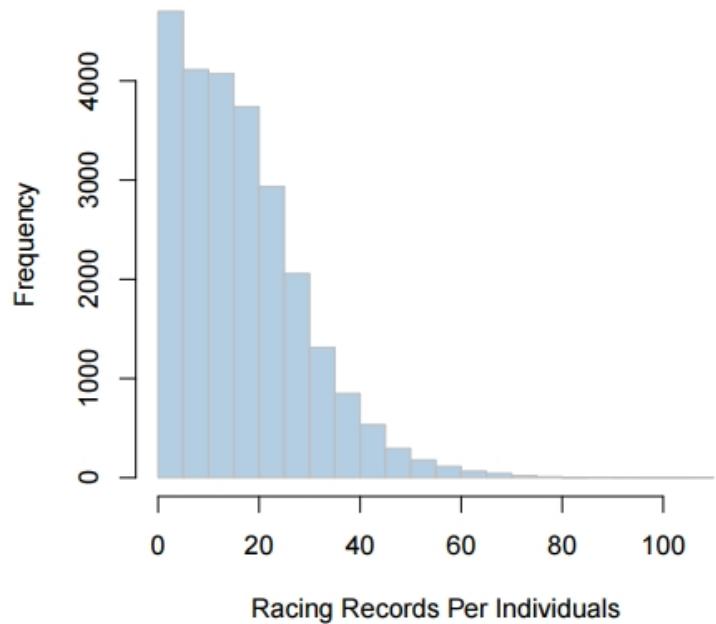
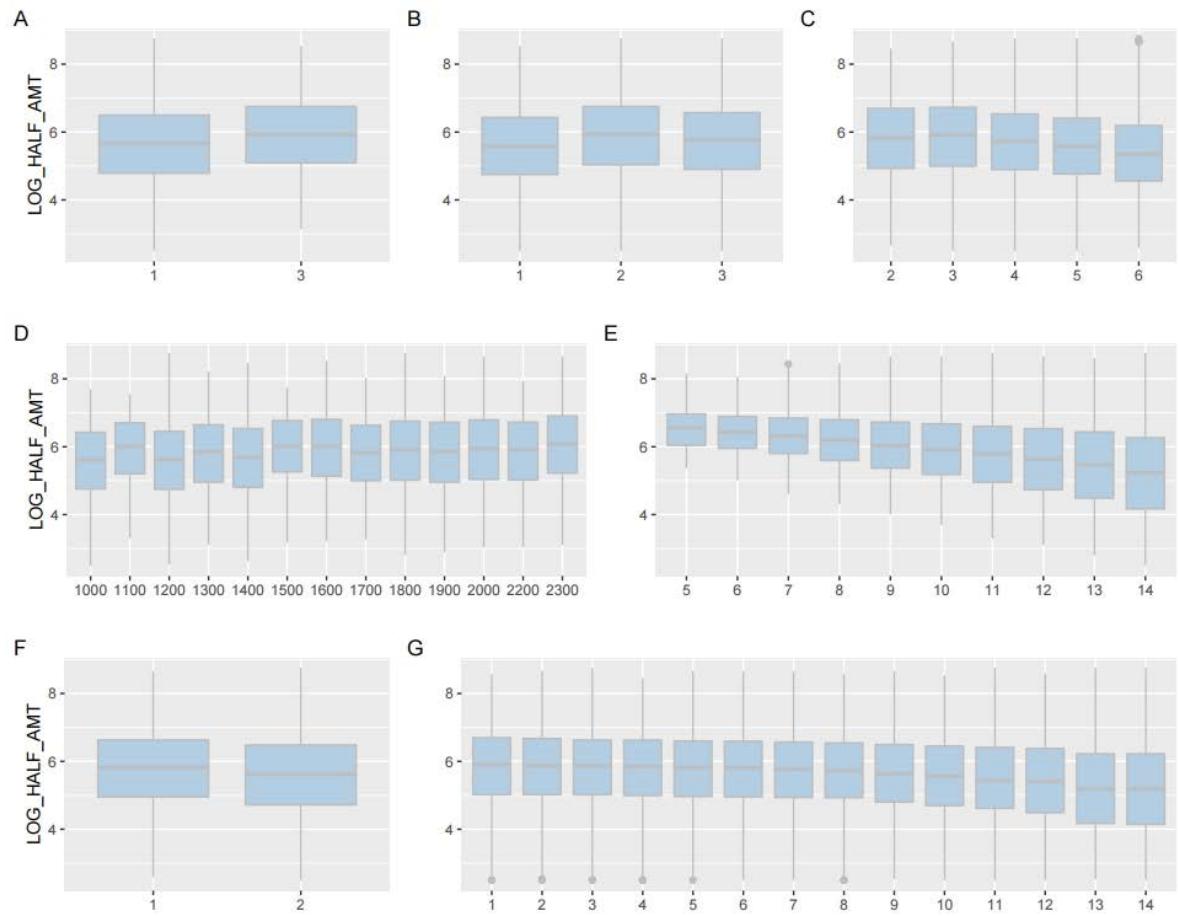


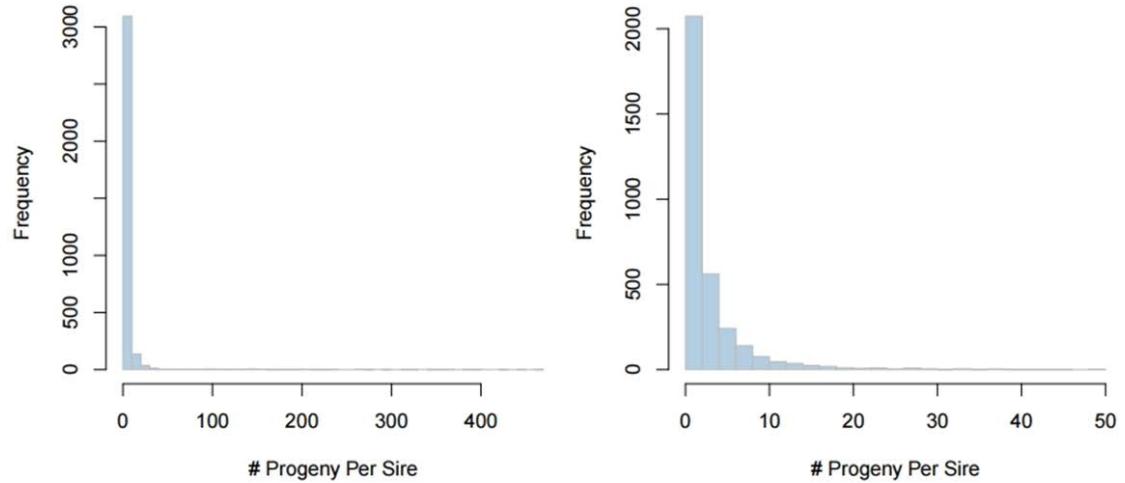
Supplementary Figure 1. Histogram of KRA horse racing prize index



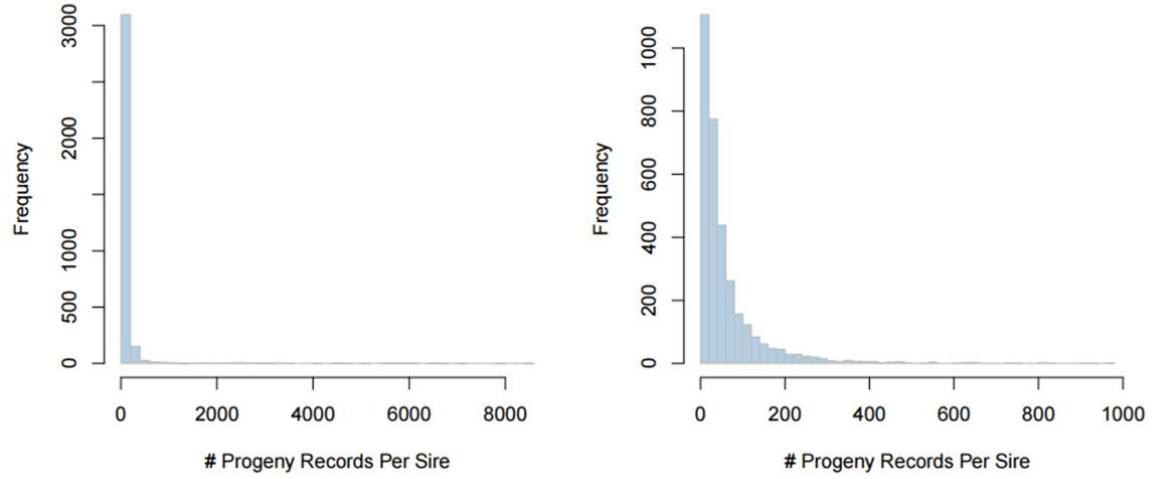
Supplementary Figure 2. Histogram of KRA horse racing record number per individual



Supplementary Figure 3. KRA horse racing prize index boxplot per covariate (A) MEET(Seoul / Busan-Gyeongnam), (B) SEX(female, male, gelding), (C) AGE(2-year-olds, 3-year-olds, 4-year-olds, 5-year-olds, more than 6-year-olds) (D) DISTANCE (E) Number of Runners (F) Classification(domestic-bred / foreign-bred) (G) Gate Number



Supplementary Figure 4. Histogram of progeny number per sire of Korea (All: 3,364 & 0~50: 3,282)



Supplementary Figure 5. Histogram of progeny racing records number per KRA sire (All: 3,364 & 0~1000: 3,294)

Supplementary Table 1. Cross-validation results of racehorses of Korea that participated in the first race in recent five years

*COR: correlation between EBV (from BLUP estimation without racehorse racing records of the test population) and KRA prize Index mean, **ACC: realized accuracy

Year	All			10 races or more horse			less than 10 races horse		
	n	COR*	ACC**	N	COR	ACC	n	COR	ACC
2018	1,279	0.214	0.610	640	0.202	0.575	639	0.242	0.690
2017	1,256	0.281	0.799	818	0.256	0.729	438	0.274	0.780
2016	1,259	0.235	0.670	817	0.250	0.710	442	0.157	0.446
2015	1,230	0.250	0.713	843	0.248	0.707	387	0.219	0.625
2014	1,292	0.241	0.688	879	0.307	0.875	416	0.133	0.379

Supplementary Table 2. KRA prize index mean of each group after grading using EBV (from BLUP estimation without racehorse racing records of test population). Grade 1: top 0~20%, Grade 2: top 20~40%, Grade 3: top 40~60%, Grade 4: top 60~80%, Grade 5: top 80~100%

2018				
Grade	n	MEAN	sd	se
1	256	6.155	0.713	0.045
2	256	6.016	0.667	0.042
3	256	5.933	0.735	0.046
4	256	5.902	0.743	0.046
5	255	5.655	0.748	0.047
2017				
Grade	n	MEAN	sd	se
1	252	6.197	0.636	0.04
2	251	5.914	0.669	0.042
3	251	5.773	0.739	0.047
4	251	5.786	0.711	0.045
5	251	5.616	0.707	0.045
2016				
Grade	n	MEAN	sd	se
1	252	6.028	0.602	0.038
2	252	5.828	0.689	0.043
3	252	5.764	0.617	0.039
4	252	5.686	0.737	0.046
5	251	5.543	0.762	0.048
2015				
Grade	n	MEAN	sd	se
1	246	5.974	0.695	0.044

2	246	5.876	0.668	0.043
3	246	5.717	0.667	0.043
4	246	5.693	0.697	0.044
5	246	5.488	0.715	0.046
2014				
Grade	n	MEAN	sd	se
1	259	6.024	0.667	0.041
2	259	5.884	0.643	0.04
3	258	5.741	0.724	0.045
4	258	5.628	0.684	0.043
5	258	5.578	0.624	0.039