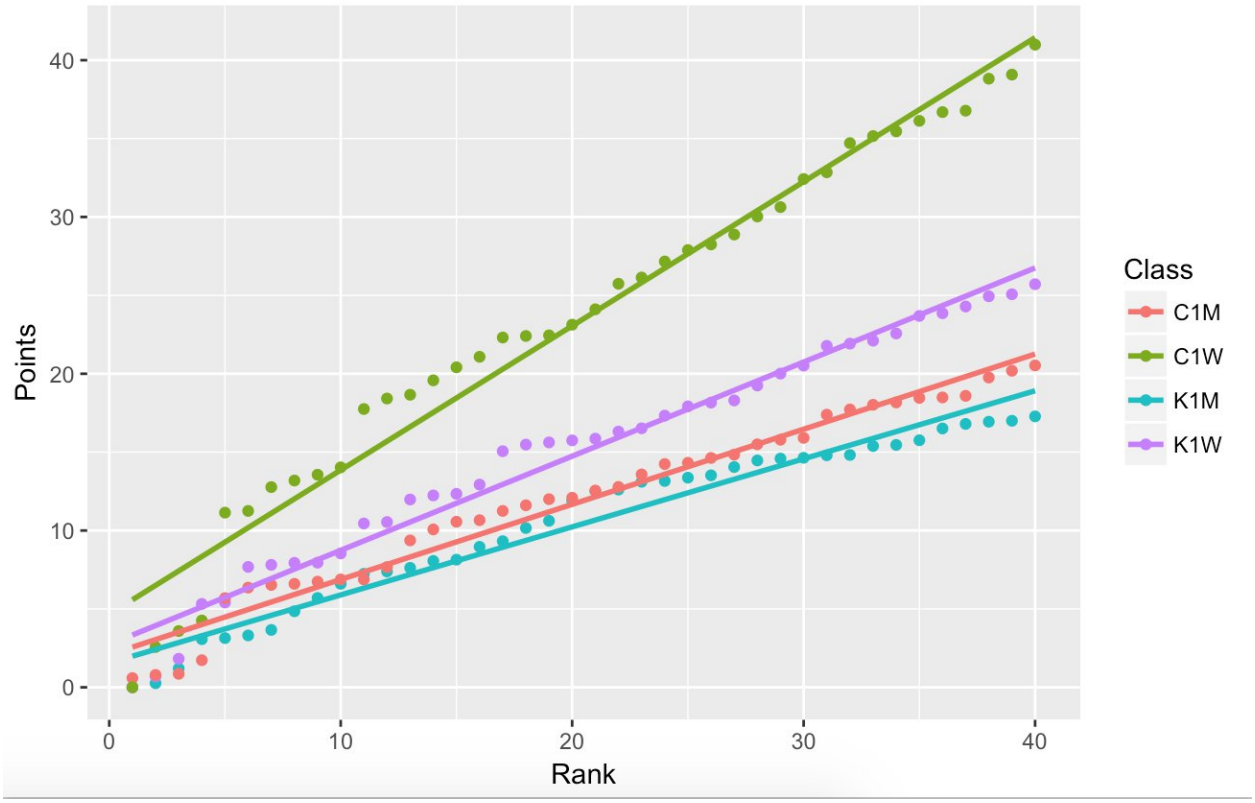
CKC/ICF points adjustment rationale

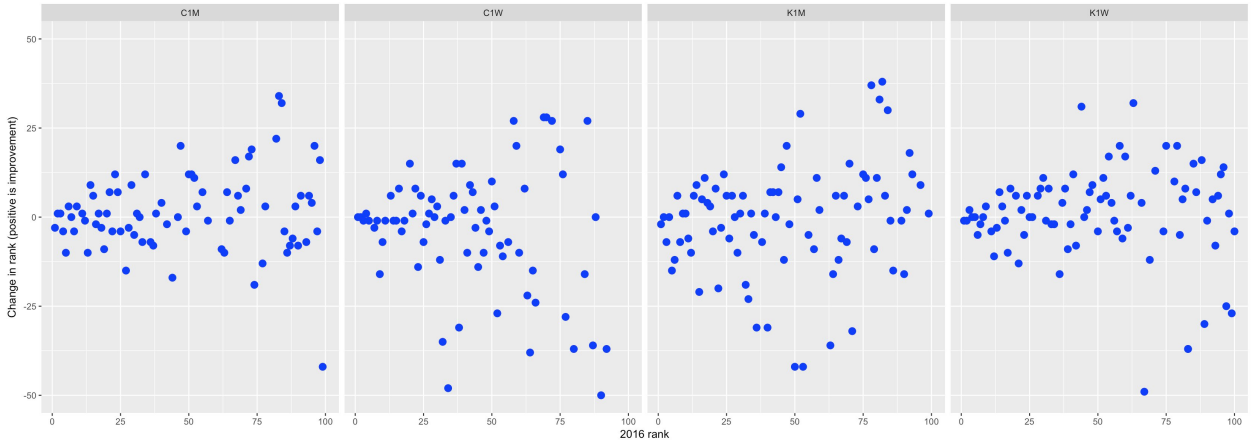
The objective of the CKC/ICF ranking is to prioritize AAP resources to athletes based on international performances achieved at eligible ICF events listed on the Canoe Slalom Carding cycle competition schedule. Following an analysis of the ICF World Ranking points distribution across the four Olympic classes, we observe that points at a given rank vary significantly by class.



In 2017, the 20th ranked K1M had 11.9 points; the 20th ranked C1W 24.12 points. The 67th ranked K1M had the same points as the 20th C1W.

This is caused by differences in depth of field across classes. There are more 'good' K1M in the world than in other classes.

While it may indeed be 'harder' to be the 20th K1M than the 20th C1W, it's equally hard to advance across all classes. Year-over-year change in ranks has similar distribution across classes.



That is to say, even if it's 'harder' to be the 20th K1M, that doesn't make it more likely that you'll do better next year. You're no 'closer' to a medal than in the other classes.

Since we treat a performance - a top-8, top-16 or a medal or an Olympic berth - as equally valuable across classes, we should value performance in terms of the relative gap from the podium. And the best in-class measure of how far you were from the top is rank.

So, we need a way to compare rank across classes. We could just use rank, but it is too cumbersome to calculate for just Canadians - you need to rank *everyone* to know the rank of anyone.

Instead, we will modify ICF points in such a way that they are comparable (same for a given rank) across classes.

Since points by rank follows a linear pattern, we can do this with an ordinary least-squares (OLS) linear regression.

From above, the regression for each class is

estimated points K1M = 0.4341 * rank K1M + 1.5516

estimated points K1W = 0.6004 * rank K1W + 2.7337

estimated points C1M = 0.4793 * rank C1M + 2.0849

estimated points C1W = 0.9195 * rank C1W + 4.6629

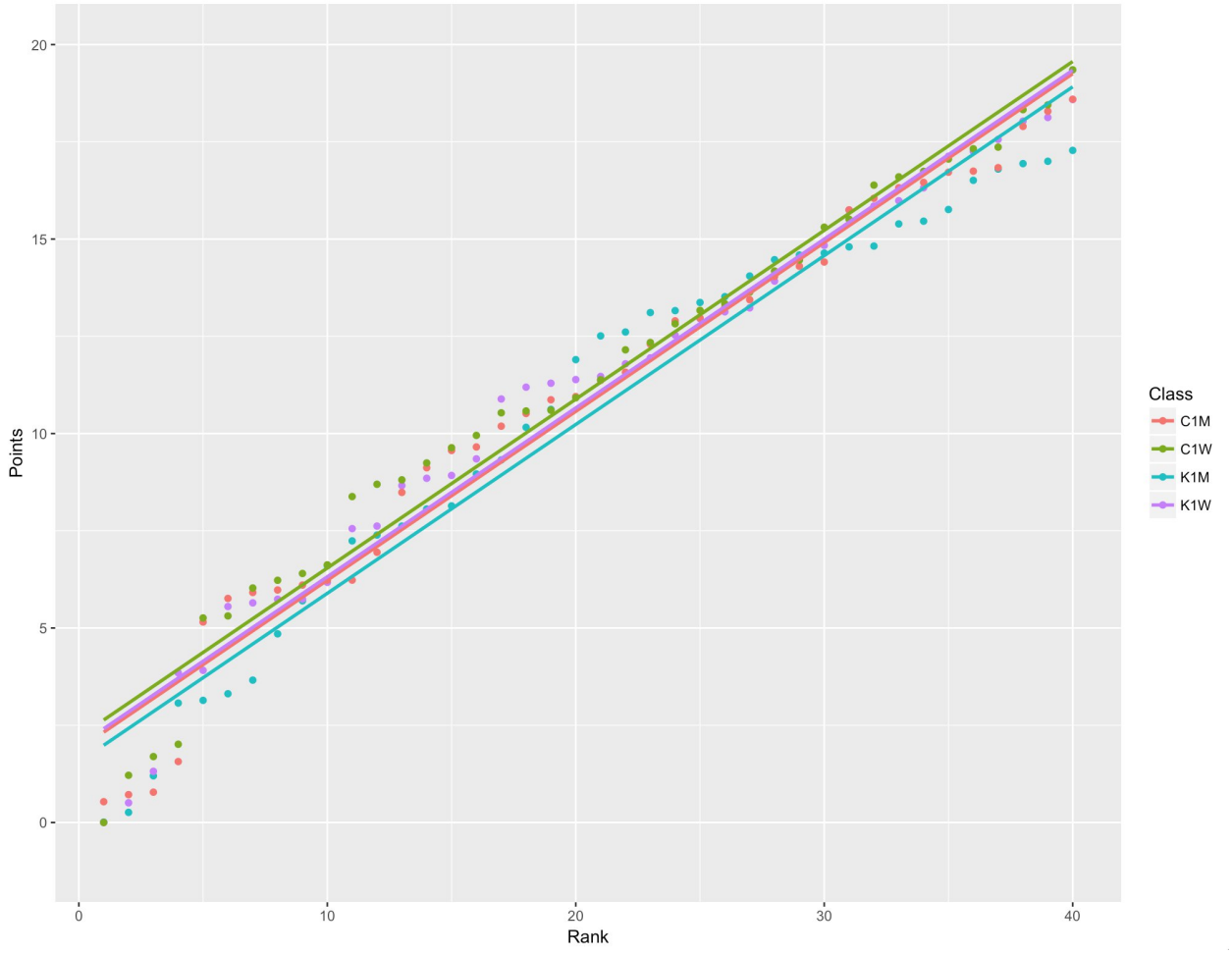
Following some algebra, we get these adjustments for equivalence

K1W points * 0.7230 - 0.4249

C1M point * 0.9057 - 0.3367

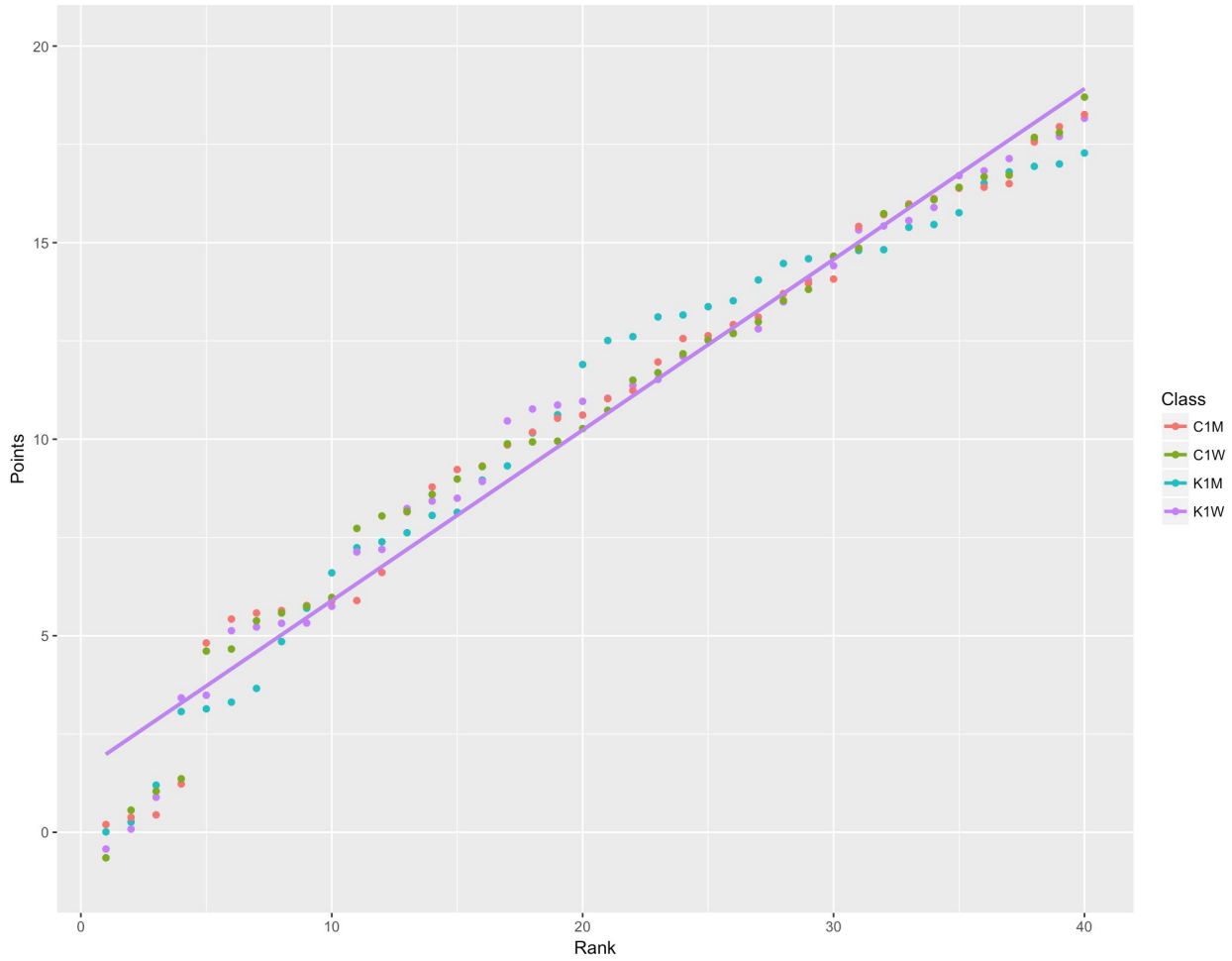
C1W points * 0.4721 - 0.6498

I'll visually demonstrate that these work, but please feel free to contact me for the underlying data and calculations if you're curious. First, apply the multiplicative factors -



This has the affect of making the slope of each line the same. This means there's the same number of points per rank for each class.

Next apply the additive factors -



This makes each line the same height. That is, each class has an equivalent base number of points.

This process allows us to compare any two athletes in terms of CKC/ICF Ranking points and use these as a proxy for interclass rank.