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Outliers: The Story of Success, by Malcolm Gladwell, suggests that hockey players (particularly Canadians) with birthdays in earlier months have a greater chance of becoming elite players than those with birthdays in later months [1]. After all, if the eligibility cutoff for age-class hockey is January 1st, then a boy born in January has almost an entire extra year to grow than another boy born in December, yet they both must compete for the same roster spot.¹ Gladwell [1, pp. 20-21], for example, notes the disproportionately large number of young men (almost half of the entire roster) born in January, February, and March on the 2007 Medicine Hat Tigers Canadian Junior A league hockey team.

The purpose of this brief note is to examine the birth dates of hockey's elite, Canadian players elected to the National Hockey League (NHL) Hall of Fame through the year 2008. The data on birth dates are from www.legendsofhockey.net/html/legendsplayer.htm.

The calendar year will be divided two different ways. First, the calendar year will be divided into three-month periods (hereafter, the Gladwell division): January, February, March in the first period (hereafter, the first quarter); April, May, June in the second (hereafter, the second quarter); and so forth. Alternatively, one might want to test the belief that the elite players in a winter sport were generally born in winter months (henceforth, the seasonal division). The winter months are here assumed to be December, January, and February; the spring months are March, April, and May; the summer months are June, July, and August; and the fall months are September, October, and November. Of the 240 players inducted into the NHL's Hall of Fame through the year 2008, 219 were born in Canada (with birth dates reported for 213 of these inductees). And, of the 213 Canadian players enshrined in the Hall of Fame, 29.1 percent were

born in the first quarter, 22.1 percent were born in the second quarter, 22.5 percent were born in the third, and 26.3 percent were born in the fourth. By comparison, 32.9 percent were born in the winter, 22.1 percent were born in the spring, 23.9 percent were born in the summer, and 21.1 percent were born in the fall.

Table 1 shows the Gladwell breakdown of births for various subgroups of Canadian born inductees. Table 2 shows a similar breakdown by season. To determine whether there are statistically discernible variations, either by quarter or by season, a χ^2 goodness-of-fit test was done of the null hypothesis that births are spread evenly over all four three-month periods (quarterly or by season).

In view of the χ^2 values reported in the last column of Tables 1 and 2, the null hypothesis cannot be rejected (at better than the .05 significance level) using Gladwell's quarterly division.² But, the null hypothesis can be rejected in several instances using the seasonal breakdown. And, in particular, Canadian Hall of Famers, notably defensemen, born in Quebec or before 1944 were winter babies more often than not.

Table 1. Births by Quarter for Various Groups of Canadian NHL Hall of Famers

Group	Quarter				χ^2
	First	Second	Third	Fourth	
All inductees	62	47	48	56	2.831
Position					
Forwards ^a	32	19	30	28	3.624
Defensemen ^b	20	14	10	11	4.418
Birthdate					
Before 1944 ^c	52	38	36	47	3.948
After 1944	10	9	12	9	0.600
Province ^d					
Ontario	32	25	25	30	1.357
Quebec	20	8	9	15	7.231 ^{***}

* Significant at better than the .01 level.

** Significant at better than the .05 level.

*** Significant at better than the .10 level.

^a Forwards include right wing, center, and left wing.

^b The difference between “All inductees” and the sum of “Forwards” and “Defensemen” include goalies, rovers, and players identified as playing multiple positions.

^c No inductees were born in 1944.

^d Canadian Hall of Famers include natives of other provinces: Manitoba (18), Saskatchewan (17), Alberta (8), British Columbia (4), and one each from New Brunswick, Nova Scotia, and Newfoundland.

Table 2. Births by Season for Various Groups of Canadian NHL Hall of Famers

Group	Season				χ^2
	Winter	Spring	Summer	Fall	
All inductees	70	47	51	45	7.376**
Position					
Forwards ^a	35	19	28	27	4.725
Defensemen ^b	22	16	13	4	12.273*
Birthdate					
Before 1944 ^c	61	37	40	35	10.006**
After 1944	9	10	11	10	0.200
Province ^d					
Ontario	32	25	25	30	1.357
Quebec	20	8	9	15	7.231***

* Significant at better than the .01 level.

** Significant at better than the .05 level.

*** Significant at better than the .10 level.

^a See footnote *a* in Table 1.

^b See footnote *b* in Table 1.

^c See footnote *c* in Table 1.

^d See footnote *d* in Table 1.

Reference

1. M. Gladwell, *Outliers: The Story of Success*, Little, Brown and Co., New York, NY, 2008.

Footnotes

1. Two notable January babies now enshrined in the NHL Hall of Fame are Wayne Gretzky (born on January 26, 1961) and Mark Messier (born on January 18, 1961).
2. We cannot reject the null hypothesis of no difference in the birth rate between months ($\chi^2 = 9.366, p = .588$). There are as many Canadian Hall of Famers born in January as there are in December (25).