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Bruce E Sagan* (sagan@math.msu.edu). *Open problems for Catalan number analogues*. Preliminary report.

Consider the version of the Fibonacci numbers satisfying $F_0 = 0$, $F_1 = 1$, and $F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$. Define the n th *Fibotorial* to be $F_n! = F_1 F_2 \cdots F_n$. The *Fibonomial coefficients* are the quotients $\binom{n}{k}_F = F_n! / (F_k! F_{n-k}!)$ for $0 \leq k \leq n$. It is not hard to see that these numbers are integers and a simple combinatorial interpretation for them using tilings was given by Sagan and Savage. On hearing about this work, Lou Shapiro asked the following questions. Define the *FiboCatalan numbers* to be $C_{n,F} = \binom{2n}{n}_F / F_{n+1}$. Are these integers? If so, what is a combinatorial interpretation? It is easy to show that the answer to the first question is yes. The second is still open. We give a series of related open problems involving Lucas sequences, q -analogues, rational Catalan numbers, and Catalan numbers for Coxeter groups. (Received August 09, 2014)