

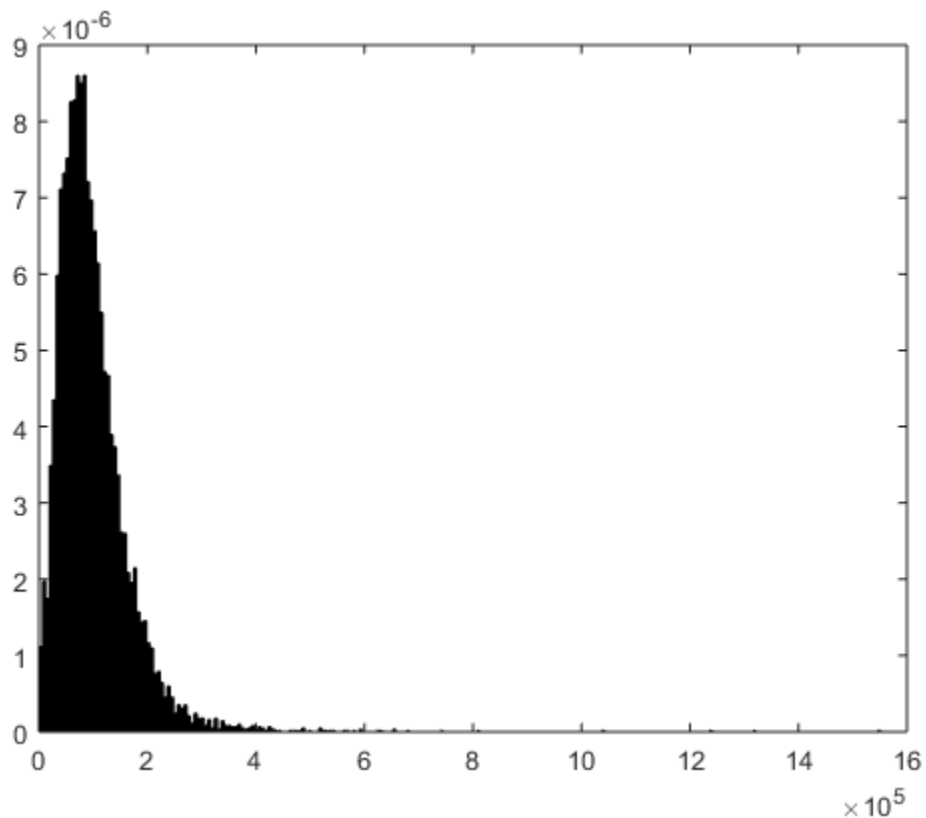
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% Lab 1, Exercise 3
M = 10000; % number of simulations
lambda = 5;
scale = 10000;
shape = 2;
k = 1/shape;
sigma = k*scale;
theta = sigma/k;
total_claims = zeros(M,1); % vector to store claims
for i = 1:M;
    num_claims = poissrnd(lambda); % how many claims were there in
    year i?
    % How much was each of the claims worth?
    % syntax for Pareto r.v.'s - gprnd(k,sigma,theta)
    % generate num_claims pareto r.v.'s and sum them up
    total_claims(i,1) = sum(gprnd(k,sigma,theta,num_claims,1));
end
% We expect this number to be lambda*(shape*scale/(shape-1)) = 100,000
mean(total_claims)
% Plot the empirical density of the claims
[f,x] = hist(total_claims,250);
bar(x,f/trapz(x,f)), colormap(bone);

ans =
    98.8277e+003

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