Latent Defect Estimation Worksheet

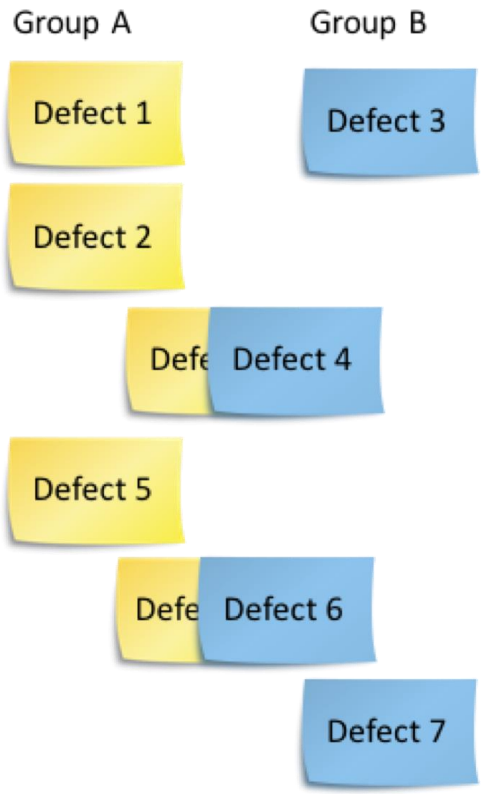
Capture-Recapture Method for latent defect estimation

Capture-recapture is a way to estimate how well the current investigation for defects is working. The basic principle is to have multiple individuals or groups analyze the same feature or code and record their findings. The ratio of overlap (found by both groups) and unique discovery (found by just one of the groups) gives an indication of how much more there might be to find.

References: Walt Humphries in the Team Software Process (SEI/CMU), Joseph Schofield in Estimating Latent Defects using Capture-Recapture: Lessons from Biology.

$$\text{Estimated total defects} = \frac{\text{Found by group A} \times \text{Found by group B}}{\text{Found by BOTH group A and B}}$$

$$\text{Estimated defects un-discovered} = \text{Estimated total defects} - \text{Unique defects found so far}$$



Total found by A = 5

Total found by B = 4

Found by BOTH = 2

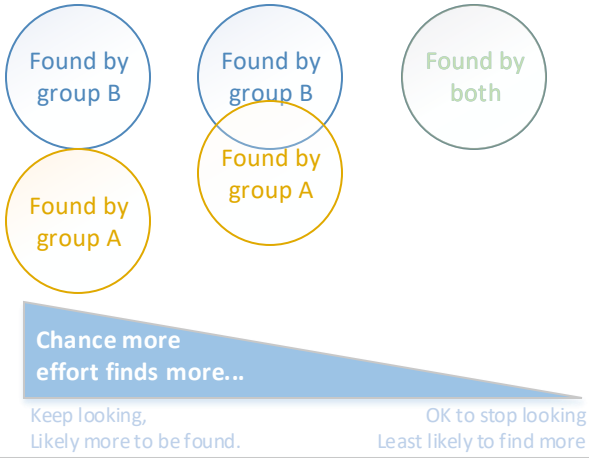
Total found = 7

$$\text{Estimated total} = \frac{5 \times 4}{2} = 10$$

$$\text{Estimated un-discovered} = 10 - 7 = 3$$

General idea...

The more overlap in the defects two independent groups find, the fewer defect remain un-discovered



How to -

1. Set two independent groups the task of testing or reviewing the same code or document
2. Have each group record the defects or errors they find
3. After a period of time, match the defects found by each group to count the duplicates
4. Estimate the number of remaining defects versus how many unique defects have been found using the formula

What to avoid -

1.Team not reporting duplicates. You need to encourage the groups to report EVERYTHING they find
2. Teams testing too quickly. If testing isn't thorough enough, latent defects will appear less than actual. Make sure each team at least "feels" they have looked thoroughly
3. Assuming this estimate is perfect. This technique is an estimate to decide whether more time is worth it.

Some ideas when to use it -

Bug bash days: set two groups the task of looking for defects in the same feature area. Get a feeling for stability.
Customer beta programs: create two groups of beta testers (A-K and L-Z first letter of first name) and analyze the defects they report as from group A and B. Helps release earlier with confidence.

For more probabilistic forecasting resources: FocusedObjective.com Email: troy.magennis@focusedobjective.com