Estimating Defects

1. Estimating Undiagnosed Defects
   1. 3 methods discussed here
      1. historic data
      2. defect seeding
      3. defect pooling
   2. Each approach has significant shortcomings
      1. Limited accuracy
      2. Complication to schedule
      3. Assumptions
      4. Duplication of effort
2. Histonic Data
   1. Use old data on defect density to estimate total defect count to be expected
   2. Total defect = Old defect density / density of currently found defects \* number of defects found so far
   3. Primary problem:” Past results may not be indicative of future performance”
      1. Quality standards may have changed (particularly in rush)
3. Tagging Analogy
   1. Suppose that you wanted to estimate the total number of fish in a lake
   2. Suppose that all you have is 100 fish tags
   3. How would you proceed?
   4. What if you
      1. Caught, tagged and released 50 fishes
      2. Caught 100 more fishes
      3. Found that 5 of these caught fish are found to be tagged
   5. How many fish are likely to be in the pond?
   6. Since we caught 5/50 of tagged fish within the later catch, we estimate that this is the fraction of all fish we caught in the later catch 🡺 good guess that total number of fish in pound is 100/(5/50) = 1000
4. Assumptions?
   1. Catches of fish are independent
      1. Not based on
         1. Net size
         2. Depth of trawling
         3. Less elusive fish being caught
5. Defect Seeding
   1. Defects Found
      1. Seeded
      2. Indigenous
   2. Defect pool
   3. Estimation formula
      1. Total defects = ((Total seeded defects)/(Seeded defects found))\* Total number of found defect
      2. Seeded defect should cover
         1. Broad areas of functionality
         2. Many level of severity
      3. Seed prior to beginning of test in question
         1. For automated tests, can seed at any point
6. Defect Seeding: Caveats
   1. Need to intercept quickly (at time of sanitization)
      1. May forget/mess up when attempting to fix seeded bugs
      2. Attempted fixes for seeded bugs can cause new problems or hide other problems
      3. May cause resentment (people feel making looking bad)
   2. Suggestions
      1. Keep seeded defects simple (1-2 lines of code)
      2. Eliminate carefully before shipping
7. Defect Pooling
   1. Establish tow independent pools of found defects
      1. Should operate independently (no coordination)
      2. Test full scope of software
      3. Suggestion: Pools for different sets of staff
         1. Alternative: defects found at different periods of time
   2. Estimation formula
      1. Total Defects = (Defects in pool A \* defects in pool B)/(Defects in both pools A and B)
   3. Problems: overhead
8. Suggestion: Run a bug party
   1. Set up two different teams (preferably same time)
   2. Work to identify and list defects
   3. Identify common and disjoint defect
   4. Estimate total defect count (latent + know)