

The Rookies meet the check cruiser

In which ...

*Issues of quality control, sampling,
standards and training are discussed.*

Dick Fox (Dickie to his friends) was the check cruiser for the company. OH sent the two rookies out with him on a nice day for general orientation. If it was experience they needed, he would have sent them in terrible weather - but blue skies encouraged thoughtful learning. Vi was certain that it was a waste of time, but Lem was looking forward to it. Dickie was considered the finest cruiser the company had ever had. Rather than cruise, he usually taught the younger cruisers and did the auditing of their work. He did an occasional job just to remind himself about the importance of routine and to try out new ideas or instruments in realistic situations.

For a short period, the company had an outside consultant do this auditing. It didn't work. Instead of a credible outside opinion (which they were looking for) they got someone who did not know the history of the work, the personalities involved, or the internal direction and reasons for the company sampling program. The company also trained someone else's employee rather than retain those lessons inside the company. Not a disaster, but certainly not a great success either. Dickie knew how each of his cruisers learned, when to push them, and when to encourage them. He was the conduit for internal ideas, news, and informal testing. The fact that he was widely respected made a great deal of difference.

They went to the audit plots (which were chosen as sets of 5), and followed the usual procedures. The Kid hauled chain, cut brush, and made himself generally useful. The Nun observed (carefully, she insisted).

“How did you choose these particular plots to check?” Vi asked. She was always curious about the theory for procedures.

“They are chosen on a probability basis”, Dickie replied, “I am not sure of the exact process but I certainly don’t choose them myself, and I know that OH has it written up at the office. Sets of plots get a weight attached by this procedure that reflects the amount of importance that the plot groups represent. After remeasurement, that weighting goes into the database along with the audit data. This is apparently used at the end of the year to weight the audited results. OH ensures that *every* plot has a probability for selection, but in deference to my old knees he weights the really ugly and difficult groups with a reduced selection probability.”

“That would be necessary for the proper variance computation”, Vi said confidently. “I suppose that presents some complications, but I will check that when I get back to the office.¹”

Dickie tilted his head to the side and stared at her for a moment. “No”, he patiently replied, “it is necessary to find out if my cruisers are getting close to *the right answer*. Nobody looks at the variance, Miss. Why did you think we were doing this work?”

“I thought we were conducting an audit”, replied Vi, somewhat miffed at being addressed as “Miss” (Dickie had just barely suppressed “Missy”). “And I assumed that we would then do a hypothesis test to find out if the original and audit results were significantly different.”

“Get a grip”, Dickey suggested. “We already know there is a significant difference. My work is often done in better weather, with more time to spend on the measurements, and with more expertise than the ordinary cruisers – who are very good.” The cruisers were well trained because they were permanent staff. “It is absolutely impossible that the two answers would be identical if I checked all the plots, and therefore there is *unquestionably* a difference between their work and mine. That’s what a hypothesis test is designed to find out, right? *We already know* that.”

¹ OH had clued in The Kid that when dealing with experienced people like Dickie you had two options – keep your mouth shut, or politely ask leading questions. OH had tried to tell The Nun, but she didn’t get it. Trying to impress experienced professionals is always a mistake. Even when they don’t know the details better than you do, their instincts still tell them when you are a relative lightweight. Compared to Dickie, just about everyone was a relative lightweight. This was not a matter of intellectual capacity; it was a matter of 35 years of experience.

Vi was letting that question rattle around in her head for a moment to make sure she was thinking clearly. When a difference was *known* to exist, she was wondering what it meant if the hypothesis test failed to prove it. Dickie had already gone over this material with OH, and knew exactly what he was talking about. At this point Lem stepped in with a leading question.

“Is there anyone else you audit besides the company crews, sir?”, he asked. “Yes”, said Dickie. “We do have some contractors that we use during busy periods, of course, and we check them at an increased rate. The program for choosing plots to audit allows me to put in a rate I consider appropriate to each cruiser, and the results are compiled by cruiser as well”. Vi decided not to ask him how that affected the variance estimate.

“How will you use the data once it has been completed?”, Lem asked.

“We break it down into two major categories. First, and the most important one – **was the answer correct?** We check 3 things:

- 1) **Gross Volume**, which addresses any tree selection and measurement issues.
- 2) **Net Volume**, which further adds any errors about defect occurrence and severity.
- 3) **Net Dollar Value**, which additionally includes log grading issues.

Normally this is combined for all species, since our people know the species virtually perfectly. If any of these are off the scale, we take the cruiser out on a nice day like this and try to work out what the issues are. The second category is – **are there training concerns?**

- a) Did the cruiser *know* the right procedure?
- b) Did he *apply* it skillfully?
 - b1) Was there a mechanical *measurement error*?
 - b2) Was there any *attitude* or diligence issue?

“For training, we might check individual measurements and procedures to see if they are within the guidelines we think are reasonable.”

“I am curious, sir”, said Lem, “What do you feel is the best way to define ‘what is reasonable’?” “Good question”, said Dickie, “how did your former employers do it?”

Vi broke into the conversation. She was sure that her comments would be useful. “I understand that most companies set standards based on the opinion of their senior people. I was once in a group that established

standards for DBH, height, distance between plots, etc. That kind of consensus seemed like a good method.”

“Don’t you think that working people would be a bit offended by desk-jockeys deciding ‘what is reasonable’?”, suggested Dickie. “If the compilation of the data already showed that the results were adequate, what’s the loss if individual measurements are incorrect? I suppose there is a slight possibility (very slight, in his experience) that the results might be used in some sort of research work, but you need a better way to define ‘what is reasonable’ than the opinion of a bunch of inexperienced researchers or managers. We expect individual measurements to be high-quality because it should be beneath our staff’s dignity to do sloppy work – whether it matters or not.”

“In this company, we ran several of our most experienced cruisers over a set of plots that gave us about 200 measurements in each category for which we wanted to set standards. We looked at the differences in individual measurements. If the top people could only get within $\pm 5\%$ on a sunny day then it made little sense to require anyone else to do better. In fact, we decided to multiply those errors by 2 to set the company standard. *Standards were set by data – not opinion.* Bad volume or value results were grounds for repeating the work.”

“What if the work is consistently substandard?”, asked Vi.

“If the cruiser is just in the wrong business and does not have any *talent* for the work, I try to place him somewhere in the company where he will work out better. If he is temporarily *not inclined* to do the work I try to make sure he ends up working for a competitor. If he is a total cull or not essentially honest then I try my best to get him out of the profession entirely. That has not been a problem since I can remember”, said Dickie, “the poor prospects are normally driven out by the other cruisers before I have to deal with them.”

“I am not sure I understand the use of the compilations at the end of the year”, said Vi.

“First”, replied Dickie, “it is the basis for a yearly award. It may almost be random because the results are so similar, but the fact that an award is given keeps everybody’s eye on the ball. The measurement staff is constantly aware of how well they are doing.”

“Second, it is the basis for possible corrections to the field work (especially the standing inventory). Each year we offer the senior managers the option by saying ‘our audit system indicates a possible bias of about 0.3%. Do you want us to apply that correction? – it would cost \$X’. That would adjust the overall answer to *my personal level* of measurement

precision with all the advantages of better weather, more time, more experience, etc. The managers always decline to do the adjustment.”

“Then why bother to bring it up every year”, said Vi. “Because that’s the way we insure that the managers are aware of how precise our work is. It’s always a good tactic to put something you want people to remember in the form of a question they have to make an obvious decision about. Do you think we should consider another method?”, he asked with apparent sincerity ... just to make the point.

“I was also wondering about the instruments you are using”, said The Kid. “Do you think the upgrade to the latest versions were worth the cost?” “No”, said Dickie, “but I think the message was worth it.”

“Come again?”, replied The Nun. “You pay more for your equipment to deliver some kind of *message*?”

Dickie was as patient as he could be on an overly-warm day. “What impression do you think it makes on a timber cruiser (or any other field staff) when they work with millions of dollars of assets every day and I make them work with instruments that are ‘a bit cheaper’, or break when they are a 2 hour walk from the road? Should I buy marking paint that clogs and frustrates the crew, or cheaper string lines that break and therefore waste hours in the woods? First-class people use first-class instruments, second-class people use third-class instruments.”

“Does it make a good impression when your doctor brags about how cheap his instruments are doing your medical tests? Some outfits let any student off the street wreck a \$40,000 truck during the summer (*we don’t, by the way*) but they will not equip their professionals with gear that cost a few dollars more.”

“Have you noticed the shabby truck our Vice-President drives?”, asked Dickie. Vi had noticed that her own Vice-President drove a much more impressive Mercedes, but had not thought too much about it. “It’s one of our old ones”, continued Dickie. “The field crews get the new ones. They are the people who are 10 miles from help when it breaks down. Our VP is allowed a better vehicle, just like yours, but he is making a point. He orders a great new truck with the best equipment in it (on my personal recommendation), then comes downstairs and asks me if there is a crew that has been doing a good job and also needs a better truck. He then trades his new truck for their old one. Do you think it takes more than 24 hours for the rest of the company field crews to hear about that? The field staff understands that gesture, even if the other managers do not.”



At the end of the day, Dickie and OH passed in the hallway. “How did it go?”, he asked. “A hit and a Ms.”, Dickie replied. “Message received”, said OH, “thanks for your time”. The Kid got a quiet invitation to come out to the field again some time in the near future – and he did.

OH took a moment to drop by Vi’s office the next day. “Did you make a good impression on Dickie yesterday?”, he asked.

“I really don’t know”, replied Vi. It had not occurred to her that she should bother to make such an effort. “Why?”, she asked.

“Because, young lady, Dickie is your best source of good questions, practical information, a review of your own ideas, and free high-quality data. He also has a huge influence on the attitude toward *you* inside the rest of the company. Didn’t that occur to you?”

(it hadn’t, of course).

As he left, OH said “there may not be a next time, Vi ... but if there is – *get your head in the game*”.

Note to readers ... the next chapter is about variable plot cruising issues and subsampling for VBAR..