Editorial

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221β Baker street, episode 2: the blind regressor–Part 1

Previously on 221β

A fifth-year PhD candidate surprised Sherlock at his cosy 221β Baker Street flat. He was supposed to take final defence soon, but his advisor had called him to say that the whole analyses should be re-done. Sherlock, unlike his usual behaviour, decided to help this poor soul, saying to himself, 'it's the only pro bono in my life.'

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"So, with what jargon did your advisor carpet-bomb you?" Sherlock asked. "Don't try to interpret the meaning of those words from her mouth. Just spit them out as you heard them."

"Good luck, boy," John said, tapping the student's left shoulder.

"Oh, John, stay away him. Such a pep talk is meaningless. We are in analytic fiction, not a heart-warming novel. I need to use the maximum pressure to squeeze his real problem from his skull."

The student closed his eyes, trying to remember what he had heard. Eventually he opened his mouth slowly. "Well, endocrine… no…no… endogeneity issues, multicollinearity, omitted variable, residual plot, exposure adjustment, marginal mean, conditional mean, GEE, GLMM, and… there were some more. My advisor said I don't have to know all of these. But if I truly understand them, I will feel the serious urge to re-write the whole thesis." He smiled shyly and offered a hint of a shrug. "I have a pretty good memory, don't I?"

Sherlock stood up and asked in a calm and slow voice, "Do you know what you asked me about?"

Oh my gosh! It's the warning sign! John sighed and covered his eyes. He knew what would happen next. Sherlock used only two styles in his speaking: condescending or ultrafast and shouting. Calm and slow speech was not an option, and the last time he spoke in such a calm manner, the most violent but spectacular—to the audience—event occurred. He grabbed a skull without a mandible lying on the floor to the right of the sofa and threw it at the helpless client, causing the client to open his eyes widely while the skull swung behind him.

Contrary to John's expectation, nothing filled the silence anymore. John was convinced that Sherlock would really help this guy.

"John, please bring the blackboard with at least three different colours of chalk," Sherlock said.

"Ah, my friend, you must have forgotten," John said. "We are not in the original version of Sherlock Holmes! We are the vibrant characters from BBC's 21st-century version, Sherlock. And as you know, Jude Law and Robert Downey, Junior, finally got rid of the blackboard in 2009."

"Okay, forget it, John! You can find a whiteboard back there, right?" Sherlock asked, pointing at the warehouse. Turning back to the idiotic graduate student, Sherlock calmly asked, "What do you know about simple linear regression? In particular, its assumptions."

Without hesitation, the student said, "Well, we learned this acronym, LINE, sir!

L: there must be linear relation between independent and dependent variables.

I: each independent variable should be independent. (it will be corrected later.)

N: normal distribution,

E: Equal variance." He shrugged again.

"Okay," Sherlock said, "please describe the assumptions with the graphs on the whiteboard. Well, 'linear' is too obvious, so let's just talk about the remaining three. By the way, where did you learn that acronym?"

"My department chair said he developed it for us," the student answered confidently.

Holmes chuckled. "Strange. LINE was made in Johns Hopkins a long time ago. I've got to call Mary at Hopkins to let the professor from that other school claim ownership. Well, anyways, let's talk about the ideas. I guarantee that, if you understand them completely, you can answer all the questions from the evil advisors in your defence. Draw a simple regression model and explain my dear."
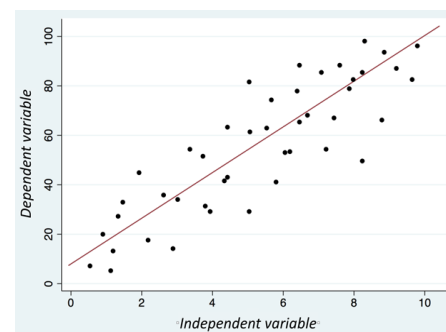

Figure1 Simple linear regression.

The student drew the above graph, at which point he realized how much he did not know about linear regression.

To be continued…

Acknowledgements

Conflicts of interest

None.

123