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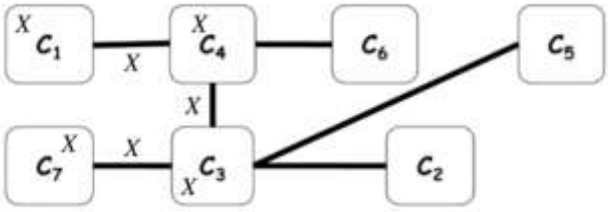
Quiz 7

1. For each pair of clusters C_i and C_j and variable $X \in C_i \cap C_j$ in the unique path between C_i and C_j, all clusters and subsets contain X.



   Same diagram as in lecture slide, X is in the path between C_1 and C_7, C_3 and C_4 contain X.

2. Two types of learning for a Bayesian network are as follows:
   a. Structure learning
   b. Parameter learning

3. My comments on the two articles are as follows:
   a. Article 1 – I shall follow the same reader- media format that the author of the article followed in his summary.
      i. Media - Frequently, I've looked up facts and statistics to support my points, counter opposing ones and so on when debating about something with my family or friends. Very often, they are easy to find, which is why the mainstream media's aversion to using those is particularly irksome.

         A blanket statistic is what is used pretty much every time to report upon news of any sort, with no thought as to conditions to it, other variables that may affect the statistic, is it simply correlation or causation, nope, not having it. In the off chance that detailed statistics with well thought out demarcations, divisions or conditions are used, they are often decried as being divisive and/or discriminatory.

         I think being good at statistics, or at least being statistically literate should be a basic criterion of being a reporter. I think that most mainstream media is excessively politicized to the point that it's not news any more. There are often times when mathematical facts, if used at all, are misunderstood, often times deliberately to support a standpoint. They are not reported on as well, if they do not support the agenda being pushed, which when put in the context of a crisis like COVID-19, can have disastrous consequences, and *have* had those, in the USA particularly.

         The mainstream media was excessively lax in reporting on the crisis, without any real details being reported about the statistics coming from European countries like Italy and Spain that were hit hard by this virus, only to swiftly change gears and go into this exaggerated frenzy about

the danger and communicability of the virus, leading to widespread fear and panic, hoarding and literally fistfights over essential supplies.

ii. Reader – Statistics are essentially the best way of evaluating most hypotheses. The more statistically educated a population we have, the better people will be at understanding reality. We all need to individually improve not just what we read/watch and believe, but also how. We must ask the right questions, think before we react and hold the media accountable, after a certain point. A lot can be said about the administration of this crisis, and we must voice these concerns as well, but equally transformative to the crisis has been the reaction to the reporting on it, which stems essentially from ignorance and in some cases a wilful disregard for the facts, driven by selfishness.

b. Article 2 – I really liked the article, it explains Type I and II errors in the context of COVID-19 very well. It nicely articulates what most people already have thought of but haven't framed it that well. The dangers of a False Negative are indeed terrifying, and this probably goes some way in explaining why some countries are rejecting certain tests and requiring more work on some vaccines before they are permitted human trials. The entire list of metrics that can be drawn from the confusion matrix is very interesting too.