Performance Assessment D210 – Representation and Reporting  
Part 3

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## C1. Dashboard Alignment

According to the scenario provided by WGU, our hospital chain data analyst team has been “asked to investigate the extent to which readmission is a problem” for our hospital system (*D210,* n.d.). The scenario also states that the data gives us “the opportunity to predict readmission based on other conditions and factors of the patient” (*D210,* n.d.). Given this, I chose to imagine that there was an ongoing project by the hospital to control patients’ Vitamin D levels to minimize readmissions.

As stated in the “Part A README” document, I chose to examine 2 KPIs. The first KPI is for excess hospital readmissions over the level expected by Centers for Medicare & Medicaid Services (CMS). The second KPI is to compare our patients’ Vitamin D blood serum levels compared to the total US population.

To provide data representations of the hospital readmission KPI, I combined the WGU medical data with the CMS Hospital Readmissions Reduction Program (HRRP) data set (CMS, 2023). To provide data representations of the Vitamin D KPI, I combined the WGU medical data with the 2017-2018 National Health and Nutrition Examination Survey (NHANES) performed by the Centers for Disease Control. (CDC, 2022).

## C2. Additional Data Set Insights

The HRRP data includes predicted and actual readmission rates for all reporting hospitals in the country (CMS, 2023). I aggregated these scores at the state and regional level to provide a comparison baseline for our hospital system.

The NHANES data includes demographic information and Vitamin D blood serum laboratory data for a representative cross-section of the US population (CDC, 2022). I combined this data with our hospital dataset to be able to compare Vitamin D levels with the national population, allowing filtering by income level, gender, marital status, or age.

## C3. Executive Decision Support

The scenario identifies three types of executive in the audience: Senior VP, VP of Research, and Regional VPs (WGU, n.d.).

The Senior VP can see the national readmission KPI. Ideally, we would collect additional data in the future and be able to show a trend in this data over time.

I imagine that the VP of Research is behind my notional ‘Vitamin D Control Project’ and can see how well the hospital is controlling patient Vitamin D levels, and the concomitant success (or lack thereof) in reducing readmissions.

The Regional VPs can see readmission levels in their regions and drill down to the state level to see where they need to focus attention.

## C4. Interactive Controls

### Hospital Readmission Rates

On the ‘Hospital Readmission Rates’ dashboard page, the user is presented with 4 maps, and in the center, the overall KPI figure for excess readmissions in our hospital system vs nationwide predicted rates by CMS.

The top left map shows CMS’ predicted hospital readmission rate for each state (or region, when the bottom left map is used to highlight). The top right map shows our system’s readmission rate for each state or region. The bottom two maps show the difference or excess readmission rate between our results and the CMS predictions. The bottom left map shows the data grouped by region for our regional VPs, while the bottom right map shows state-level data for further drill-down. Any region or state can be clicked to highlight their data in the selected map and the corresponding data in the top maps.

### Vitamin D Control

This dashboard shows our patient’s Vitamin D levels (bottom) compared to a national sample from the NHANES survey (top) in histogram format. Floating over the bottom histogram is the KPI of median Vitamin D blood serum level for the selected population. The histograms are broken up by age (20 year bins) which can be highlighted together using the Highlight Age (bin) tool at the bottom right. In addition, multi-selections filters exist for Gender, Age, Marital status, and Income level.

## C5. Colorblindness Accessibility

The maps on the readmissions dashboard are colored using a single-color gradient to indicate data rather than using something like a traffic-light gradient, where shades of red vs green may be difficult to distinguish for someone with color vision deficiency. (Shaffer, 2016).

## C6. Data Representations

The first dashboard in the story shows the current dire state of readmissions in our hospital system, far above the state averages predicted by CMS. To highlight this, I have chosen a red palette when displaying the excess readmission data.

The second dashboard shows the success of the ‘Vitamin D Control’ project, with our patients showing a very narrow range of values compared to the national NHANES data.

## C7. Audience Analysis

I adapted the content of my presentation to my presumed audience (a team of data analyst co-workers, as given by the scenario) using the following elements of audience analysis given by the University of Pittsburgh (n.d.):

* Knowledge of topic: I presume that my audience already knows the basics of Tableau and how to create dashboards.
* Audience size: I presume that my audience is on the small side, perhaps 8-15 people (i.e. enough to report to just one or two first-line managers), as well as people known to me (they are on my team). Therefore, the style is somewhat more informal than if the presentation were to senior executives.
* Egocentrism: I attempt to show how the storytelling methods used in this presentation can help them make more effective dashboards and presentations to senior management.

## C8. Universal Access

Panopto provides an automated captioning service so those hard of hearing can still understand my presentation. I went through the captions and edited them manually where they were unclear or inaccurate.

My dashboards and story have additionally been published to Tableau Cloud at <https://us-west-2b.online.tableau.com/#/site/dhaunspwgu/views/unified_med_data/D210>. This allows users who need to do so to “interact with the view and toolbar buttons using a screen reader or a keyboard.” (Tableau.com, n.d.)

## C9. Effective Storytelling

Two of the elements of effective storytelling are “plot” – i.e., “what questions […] to answer and how you’ll answer them” – and “characters” – i.e., understanding “what’s important to your audience” (Cook, n.d.).

The “plot” of my Tableau story was to answer the questions the executive audience had about hospital system readmittance and the Vitamin D control project. The “characters” are the executive audience themselves, the Senior VP, VP of Research, and Regional VPs, whose characteristics were covered in section C3.

## D. References

Centers for Disease Control and Prevention (CDC). April 2022. National Center for Health Statistics. *National Health and Nutrition Examination Survey 2017-2018.* <https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/releasenotes.aspx?BeginYear=2017>

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