

Section 7.8 – COVID OTL Dashboard

A dashboard was created to visually represent the COVID outstanding test list for our province for COVID outstanding PCR tests. This dashboard has been requested by the area manager of the Western Cape and various others on the Virology Expert Committee. Even though not a task primarily assigned to chemical pathologists, since I have an interest in data science, I tried to help. The end result was a dashboard which is updated every morning at 06h00 and every evening at 18h00 with a few JavaScript scripts running each day, updating three databases on the backend along with automated data extractions being done from TrakCare every morning and evening at a predefined time.

The screenshot shows the Visual Studio Code interface with a project named "main-auto-sachsen-node.js". The Explorer sidebar on the left lists several files, including "tutorial.js" which is currently open in the main editor area.

The code in `tutorial.js` is as follows:

```
// main-auto-sachsen-node.js - Automated - Visual Studio Code

const updateOptions = {
  spreadsheetId: "1Pfyq2yeiWvAXYkAvHtGnpwM-2Z1ZPEgLRzEKKQ",
  range: "OTL!A2:",
  valueInputOption: "USER_ENTERED", // When we update (rather than read) the sheet, there are a few extra options which need to be defined
  resource: { values: data } //resource is an object using the 'data' above
};

let res = await gsapi.spreadsheets.values.append(updateOptions); //when overwriting, the 'append' in this line needs to change to 'update': https://developers.google.com/spreadsheets/api/reference/rest/v4/spreadsheets/values#append

console.log("Completed sending to Google Sheets for " + OTLSite + " at " + year + "-" + month + "-" + date + " " + hours + ":" + minutes + ":" + seconds + " for OTL");

}

async function girunWC(c1){
  //Now we are specifying with which version we are going to use the gsapi
  const gsapi = google.sheets({version: 'v4', auth: c1});
  // define the Excel workbook
  const wb = new Excel.Workbook();
  let ExcelFileName = "NewOtl_diederick.vdsthuizen.ts_+year+month+date+'1815.xlsx'";
  let GSDate = (excelFile.slice(12,-7)) + ".00";
  let excelFile = await wb.xlsx.readFile(ExcelFileName);
  let ws = excelFile.getWorksheet("Report");
  let data = ws.getSheetValues(); //0 is the first and 1 is the second worksheet
  let OTLsite = ws.getCell("A6").value; //must be A7 if doing for province
  let site = OTLsite.slice(5,99);
  if(OTLsite.length > 2){
    OTLSite = 'W'
  }
  data = data.map(function(r){
    return [r[1],r[2],r[3],r[4],r[5],r[6],r[7],r[8],r[9],r[10],r[11],r[12],GSDate,OTLsite]
  });
  data.shift();
  data.shift();
}
```

The bottom panel of the editor displays the PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL tabs. The TERMINAL tab is active, showing the command prompt output:

```
Completed sending to Google Sheets for ST at 2020-09-17 08:42:06 for OTL date 202009170800 with file: NewOtl_diederick.vdsthuizen.ts_202009170800.xlsx
Transcribed ST
Completed sending to Google Sheets for XD at 2020-09-17 08:42:06 for OTL date 202009170800 with file: NewOtl_diederick.vdsthuizen.ts_202009170800.xlsx
Transcribed XD
Completed sending to Google Sheets for W at 2020-09-17 08:42:06 for OTL date 202009170800 with file: NewOtl_diederick.vdsthuizen.ts_202009170800.xlsx
Transcribed WC
```

Screenshot 1 – Illustration of the JavaScript code to read the extracted Excel (or CSV) files and transcribing them to a Google Sheets database.

This dashboard was used (and likely still are being used) especially by the virologists at Groote Schuur Hospital to track the progress of outstanding COVID PCR tests and it can also be used to show possible bottlenecks in pre-analytical

sample issues if tests are already registered before being sent to any of our laboratories in the Western Cape.

The dashboard consists of a few pages:

1. WC Dashboard Summary
2. Outstanding tests per OTL date
3. Outstanding tests per Registratio...
4. Outstanding tests per Location
5. Outstanding tests' details per age ...
6. WN Outstanding tests per Location
7. WN Outstanding tests per OTL date

<https://datastudio.google.com/embed/reporting/aeafe888-d10f-4959-b1f3-928556abd6f6/page/LMPXB>

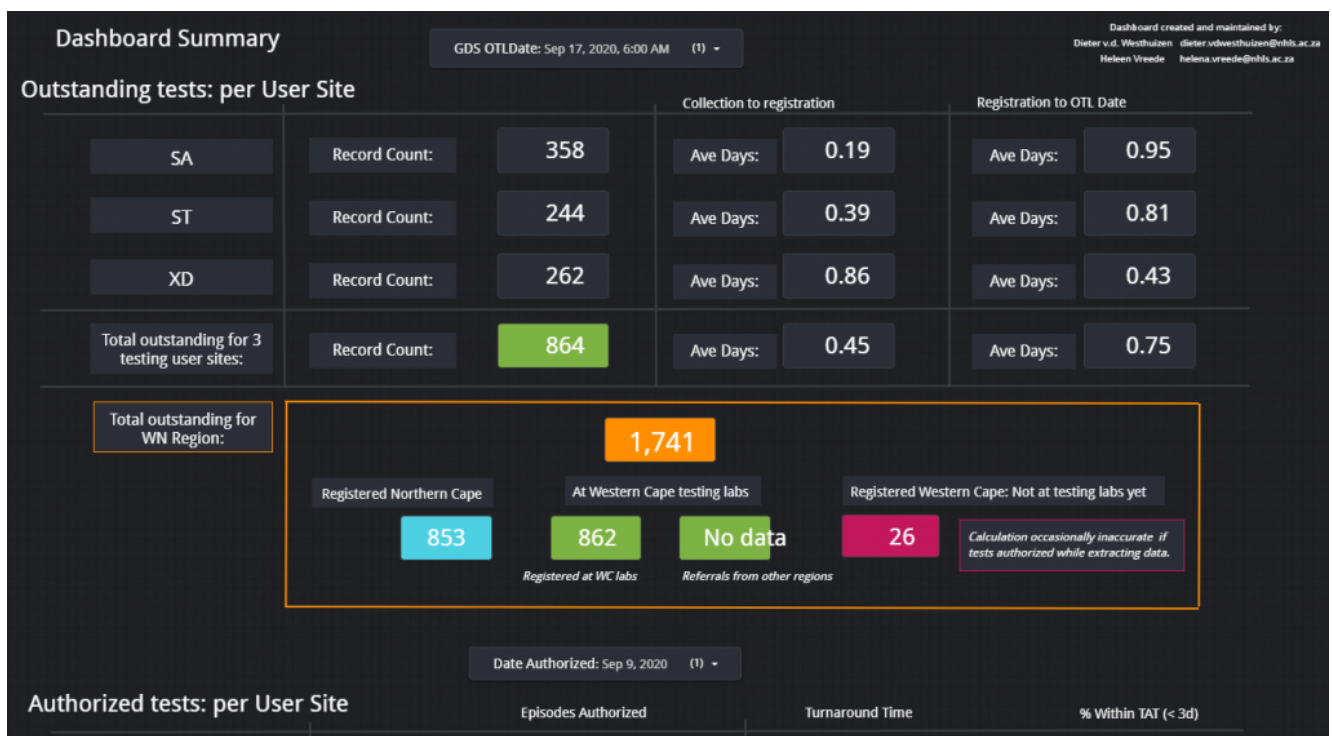


Figure 1 – Screenshot of the Dashboard. Follow the link above to view.

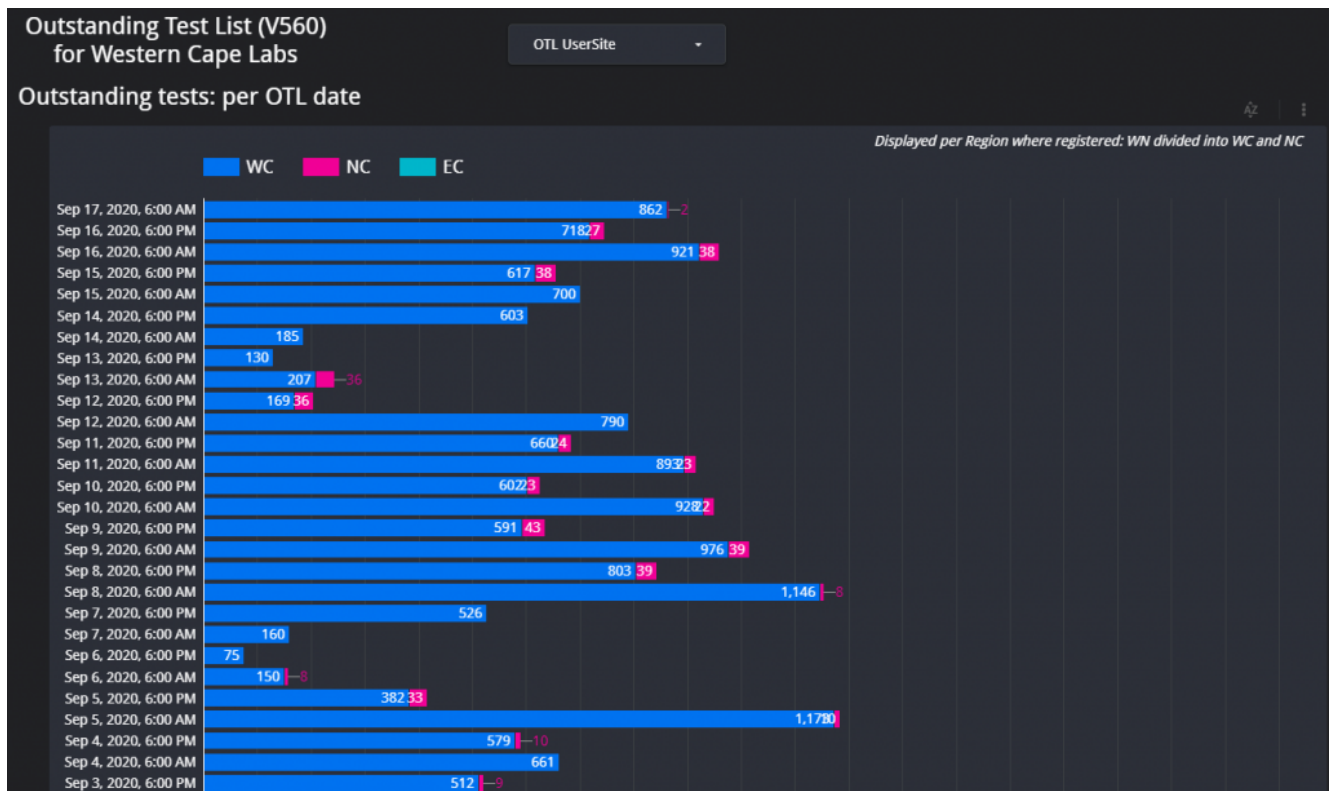


Figure 2 – Example of the layout of the page which shows the total count of items on the respective outstanding test lists for each respective data for the Western Cape.



Figure 3 – Outstanding tests summary by location. This page is especially helpful if the delay / outstanding tests from a specific hospital or clinic needs to be visualized in comparison with other locations (hospitals / clinics).

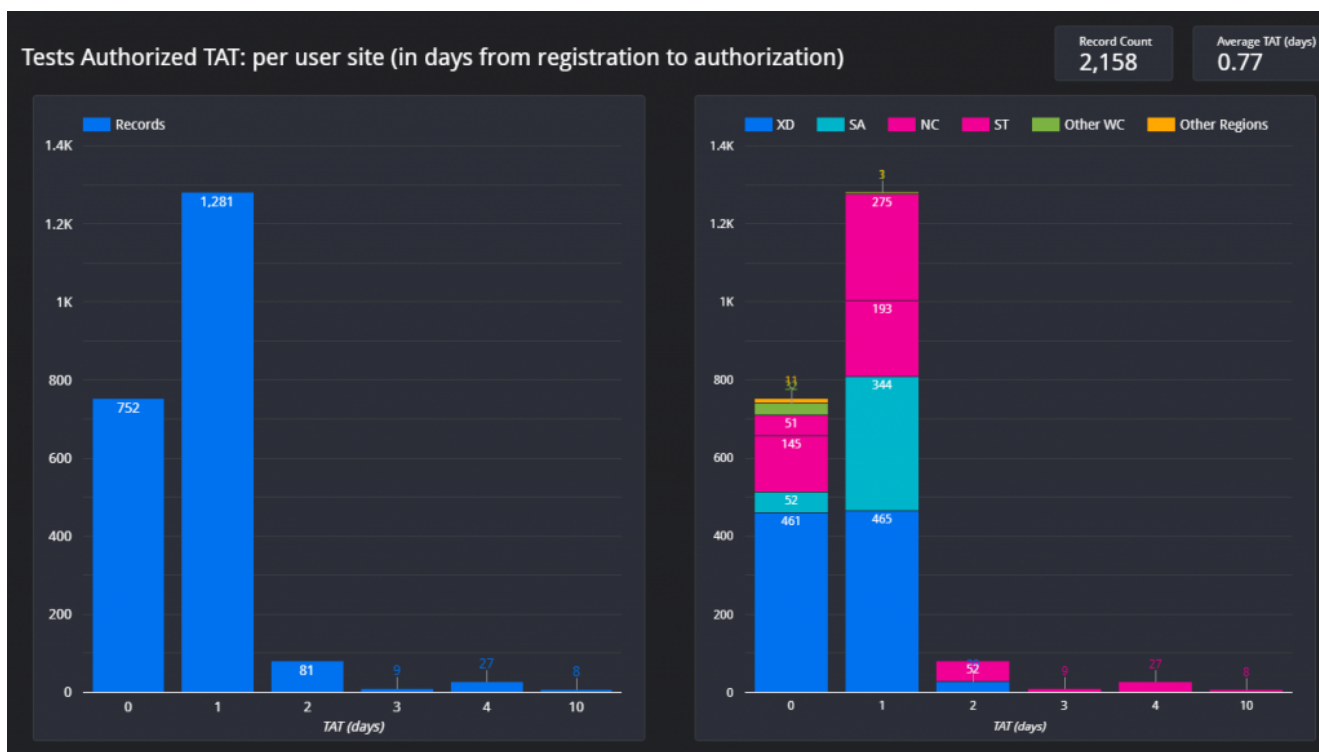


Figure 4 – Illustration of the turnaround time met by a certain count of samples per each respective user site for one day.