We'd like you to perform a demonstration of your knowledge and practical skills in basic GIS analysis and cartography.

- Your submission should be returned to Michelle Poyourow before 9:00 am Pacific time on Tuesday December 21st.
- Álvaro Caviedes is available to help you if you get stuck, through 5 pm Pacific on Friday December 17th and from 9 am through 5 pm Pacific on Monday December 20th.
- More on getting help and submitting your demonstration task are at the bottom of this document.

This demonstration task is of a residential coverage analysis on Portland TriMet's Route 2 and MAX Yellow Line.

A residential coverage analysis calculates the number of people near to transit service. For this analysis, a person should be counted if they live within 1/2 mile of transit service.

Your final products in this demonstration task should include the following:

- A nice **map**;
- a **chart, graph, or table** with the sum of residents covered by both Route 2 and MAX Yellow Line; and,
- a short, **written explanation** of your methodology, observations, and software used.

If, for technical reasons, you are unable to perform these steps, as an alternative you may provide us with a description of the technical GIS steps you would follow to do this analysis and the steps you would follow to make a visual display of relevant results.

We have provided a basic variety of datasets in the following link that may be of use to you, including:

- TriMet's transit network,
- Stops for Route 2 and MAX Yellow Line,
- 2015 American Community Survey population data,
- Census blockgroup shapefile
- Portland OpenStreetMap shapefiles.

A detailed explanation of these sources is available in the file "readme.txt" within the data folder.

Use as many or as few of the datasets as you'd like. If you want to add additional datasets and can find them, feel free.

Methodology is up to you. There are a few different methods that could be used.

Regarding the desired products:

- The map should be clear and visually appealing. It should include some form of a base map so the viewer has context – whether that be streets, rivers, parks, neighborhoods, etc., you choose. Beyond the base map, please show TriMet's Route 2 and MAX Yellow Line at a minimum. You are free to include additional layers related to your results.
- The chart, graph, or table should show the sum of residents served by Route 2 and the sum of residents served by MAX Yellow Line. It can be formatted however you wish.
- The written explanation should be around two paragraphs and less than one full page. Please briefly explain your methodology. Also include any observations and/or extrapolations about your results. We aren't looking for profound revelations from the analysis of two routes.
- Please mention which software(s) you used and whether it was your first time using such software(s).

This test can take as little or as much time as you'd like. Keep in mind we are looking for:

- spatial analysis skills;
- cartographic design skills; and,
- an ability to clearly and succinctly communicate methodology and observations.

For analysis software, we recommend QGIS, an open-source GIS, which we use here at JWA. Downloads can be found here. Learning QGIS is also part of the analyst job, so using it during the test demonstrates your ability to learn the software and may help you produce a better submission.

If you experience challenges with QGIS that you cannot solve through some research on your own, please contact us for help. Asking for help from colleagues is a frequent part of this job!

Álvaro Caviedes is available to help you during weekdays. **Email alvaro@jarrettwalker.com with questions or requests for help, through Friday December 17th during (Pacific) business hours, and again on Monday during (Pacific) business hours.** Help will not be available on the weekend.

Please attach your submission as a PDF in an email to me at michelle@jarrettwalker.com by Tuesday, December 21, 9:00 am Pacific time.