

### **Supplementary File 3: Mapping Approach and Sample Maps**

We used maps to provide participants with a visual representation of proposed retail reduction changes in their own city or town; the maps functioned as dynamic visual aids that facilitated discussion.

To construct maps, we first identified a central, well-known location about equi-distant from all major suburbs in each of the cities where the vast majority of our participants lived (i.e., Dunedin and Hamilton). Using CalcMaps, we drew a 10km radius around this central point, allowing us to effectively assign cut-off points for locations depicted within the maps.

We then used ‘Google My Maps’ (a service within Google Maps) to create baseline maps for both Dunedin and Hamilton. Using local online business directories, we added all known current tobacco retailers (within the aforementioned 10km radius) to each baseline map, grouping these together in a map ‘layer’ (essentially a list) labelled “Current Retailers- All City”. We used bright red pins to depict each retailer in this list (84 in Dunedin and 130 in Hamilton). We then added a second layer within each map - “Retailers Post-Changes” – where we identified potential designated tobacco retailers following implementation of the retail reduction policy in each city (three supermarkets in Dunedin and six in Hamilton); we identified these outlets using green pins. Note: At the time the study took place, we discussed post-policy retailer locations with NZ Ministry of Health staff. However, the legislation now enacted had not yet been introduced, thus our maps represented a ‘best guess’ scenario. Since the Smokefree Environments and Regulated Products (Smoked Tobacco) Amendment Act was passed in late 2022, the government has released maps proposing how retail outlets might be distributed across NZ.[1] These maps (pages 4, 15), on which the Ministry of Health is now consulting, suggest the proposed number of retailers in Dunedin and Hamilton (where

the vast majority of our participants were located) accurately reflected the likely outlet locations.

For each new study participant recruited from Dunedin or Hamilton, we copied their baseline map (using a My Maps feature) and customised it further by adding a third layer within each map, labelled “Current Retailers- Interviewee”. This layer contained each participants’ current usual purchase locations (i.e., where they reported getting tobacco at least once a week), which we depicted using blue pins.

Google My Maps allowed us to show each map layer (or list) either separately or in combination with other layers by simply toggling these on and off. We could thus compare and contrast current and future retail landscapes more effectively than if we had used static map images. We purposefully applied bold, contrasting colours to our map pins (red, green and blue) as a visual aid to clarify the different outlet types. Where space allowed (i.e., in second and third map layers), we displayed name labels alongside each retailer to support recognition of usual outlets. In addition, we modified the overall look of our maps to enhance the visibility of location pins (this editable feature in My Maps allowed typical Google Map features to be muted or turned off altogether, thus simplifying viewing).

Most interviews were conducted online (via the Zoom e-conferencing platform), while some were conducted by phone. During online interviews, we showed participants their personalised map via the screensharing function within Zoom (for phone interviews, we emailed participants an advance digital copy of their map). Upon opening each participant’s map, we first oriented them to what they were seeing (we began in each case by toggling OFF all three map layers, so that they saw with a simple baseline view of their city or town). We

familiarised them with the map by using our cursor to point out key areas of the city (these areas had been agreed on in advance and did not change from participant to participant). We asked each person if they wanted us to point out any more key locations to help them get their bearings; we also offered each person more time to look at the map if they felt this would be useful. Participants quickly oriented themselves and none required further time to accustom themselves to the maps.

Once participants indicated that they were comfortable with the map, we used these to facilitate discussion about their own usual purchase locations (where they buy tobacco at least once weekly); their impressions of how the tobacco retail reduction policy would impact them, personally, and their impressions of how the policy would impact other people who smoke.

To explore their usual purchase locations, we toggled ON the map layer labelled “Current Retailers- Interviewee”, to show each participant’s current usual purchase locations (indicated with blue pins). See Figures S1 and S5 below. We hovered over each pin in turn, circling it with our cursor and naming the retailer it represented. One by one, we asked participants about their reasons for purchasing from that specific location, using the map to facilitate discussion.

We probed participants’ views on the impact fewer retailers would have on them personally by toggling OFF the map layer labelled “Current Retailers- Interviewee” and toggling ON the layer labelled “Current Retailers- All City”. This latter map used red pins only to depict all known current tobacco retailers in a participant’s city (mainly dairies, service stations, liquor stores and supermarkets; this map included retailers participants had identified as their usual

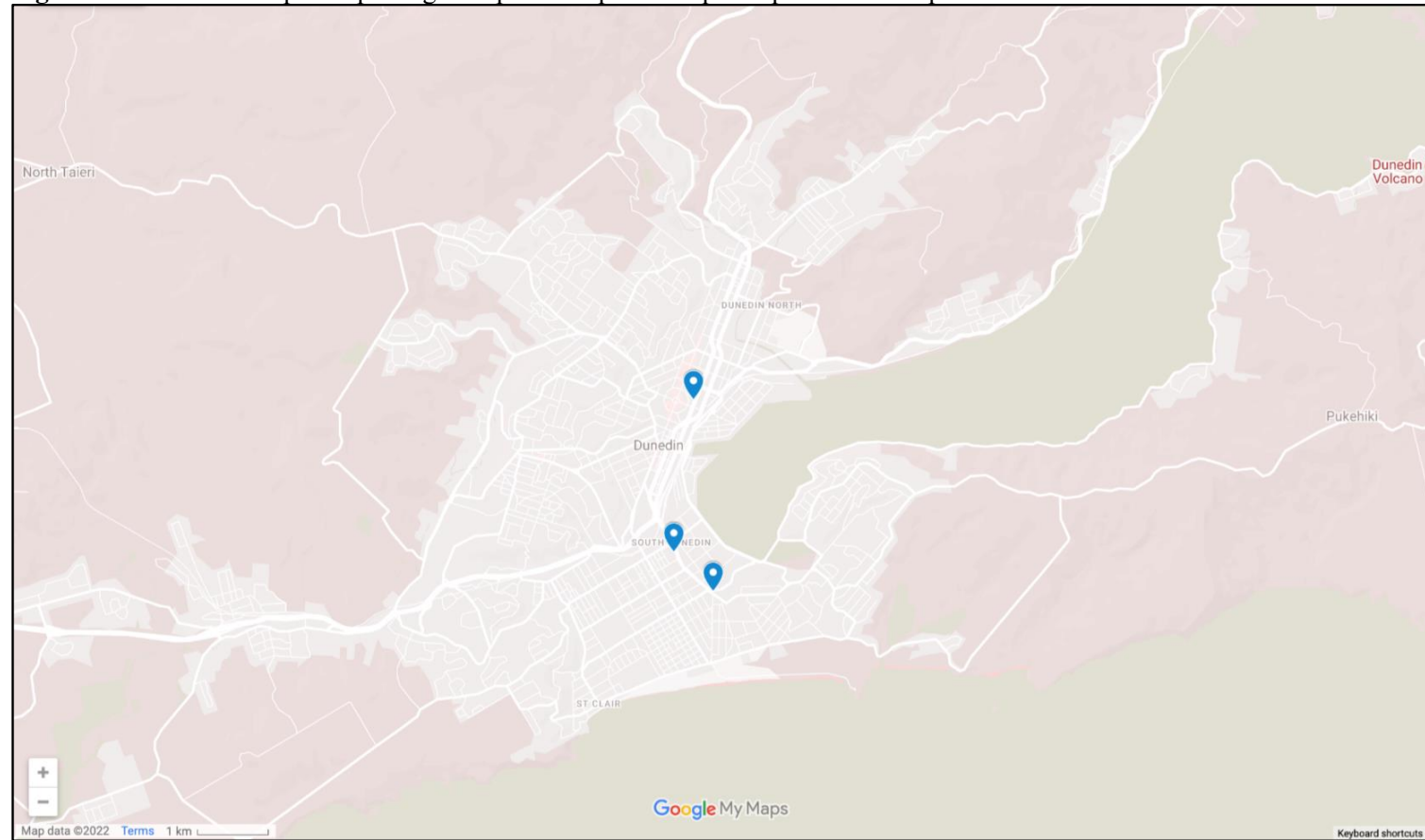
tobacco sources). See Figures S2 and S6 below. Once we had oriented participants to the status quo and checked they understood what they were seeing, we toggled OFF the map layer labelled “Current Retailers- All City”, and toggled ON the layer labelled “Retailers Post-Changes”, which used green pins only to depict potential designated tobacco retailers (supermarkets) following policy implementation. We had identified supermarkets as potential post-policy designated outlets following discussions with the Ministry of Health. See Figures S3 and S7 below. We outlined the proposed policy changes (to the extent possible at this time) and explained what the map showed. We checked if participants wanted to see a ‘before and after’ view again (i.e., current retailers vs proposed changes) or view both layers alongside each other (i.e., current retailers and proposed changes). See Figures S4 and S8 below. We then explored how they thought the policy changes would impact them personally.

To probe the wider implications a retail reduction strategy would have, we again showed participants the status quo vs the proposed changes, as described above (i.e., toggling between “Current Retailers- All City” and “Retailers Post-Changes”). After checking participants understood the maps, we explored how they thought the policy changes would impact other people who smoke.

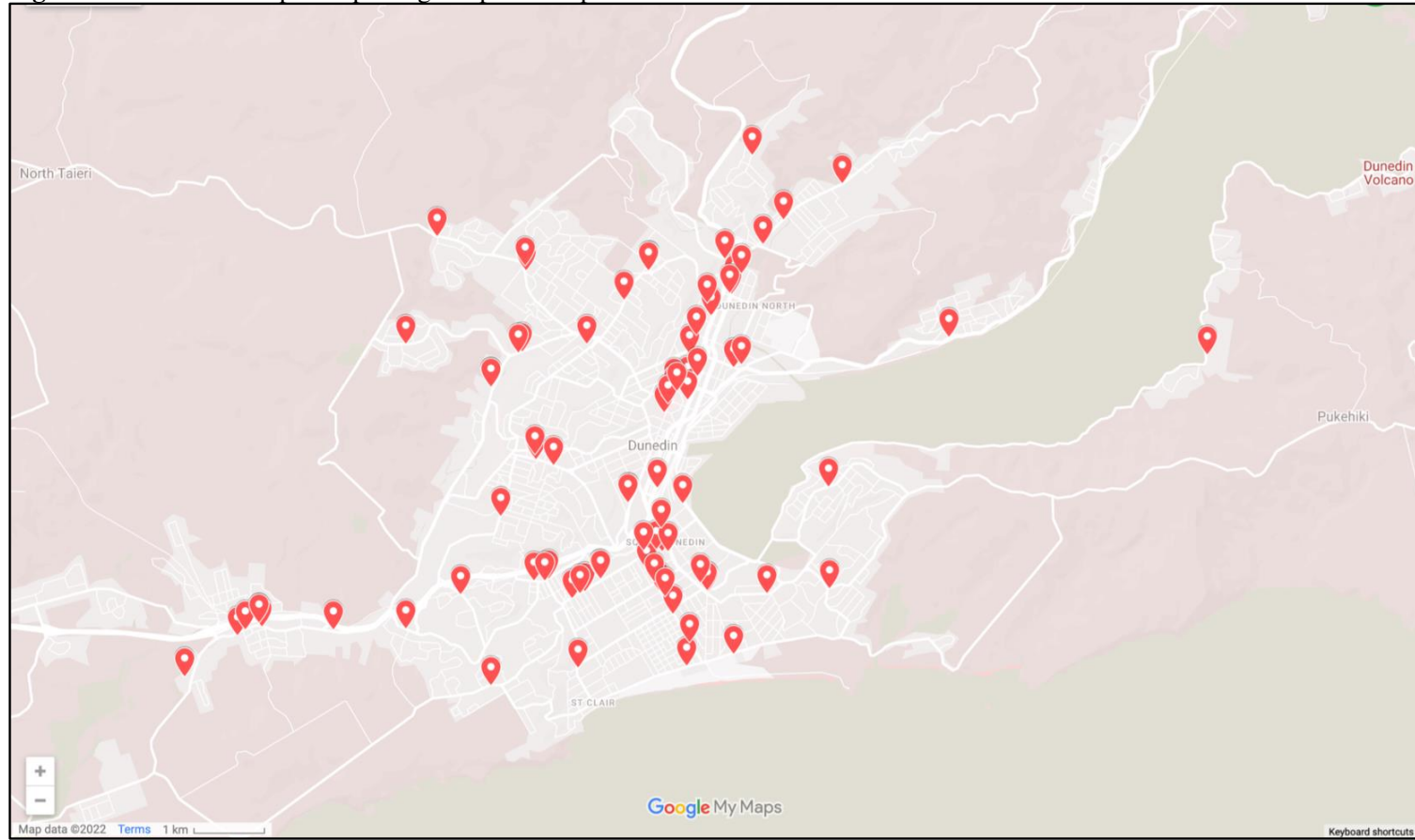
The maps were a very helpful tool to illustrate the extent of the proposed policy changes and facilitate discussions about the impact these would have. Many participants referred to their map during the interview to re-orient themselves and facilitate their thinking as they reflected on the questions we posed. For example, some asked us to zoom into specific areas of the city (e.g., their neighbourhood or another outlet from which they purchased tobacco) so that they could better visualise current retailer density in relation to the proposed changes.

## Dunedin Sample Maps

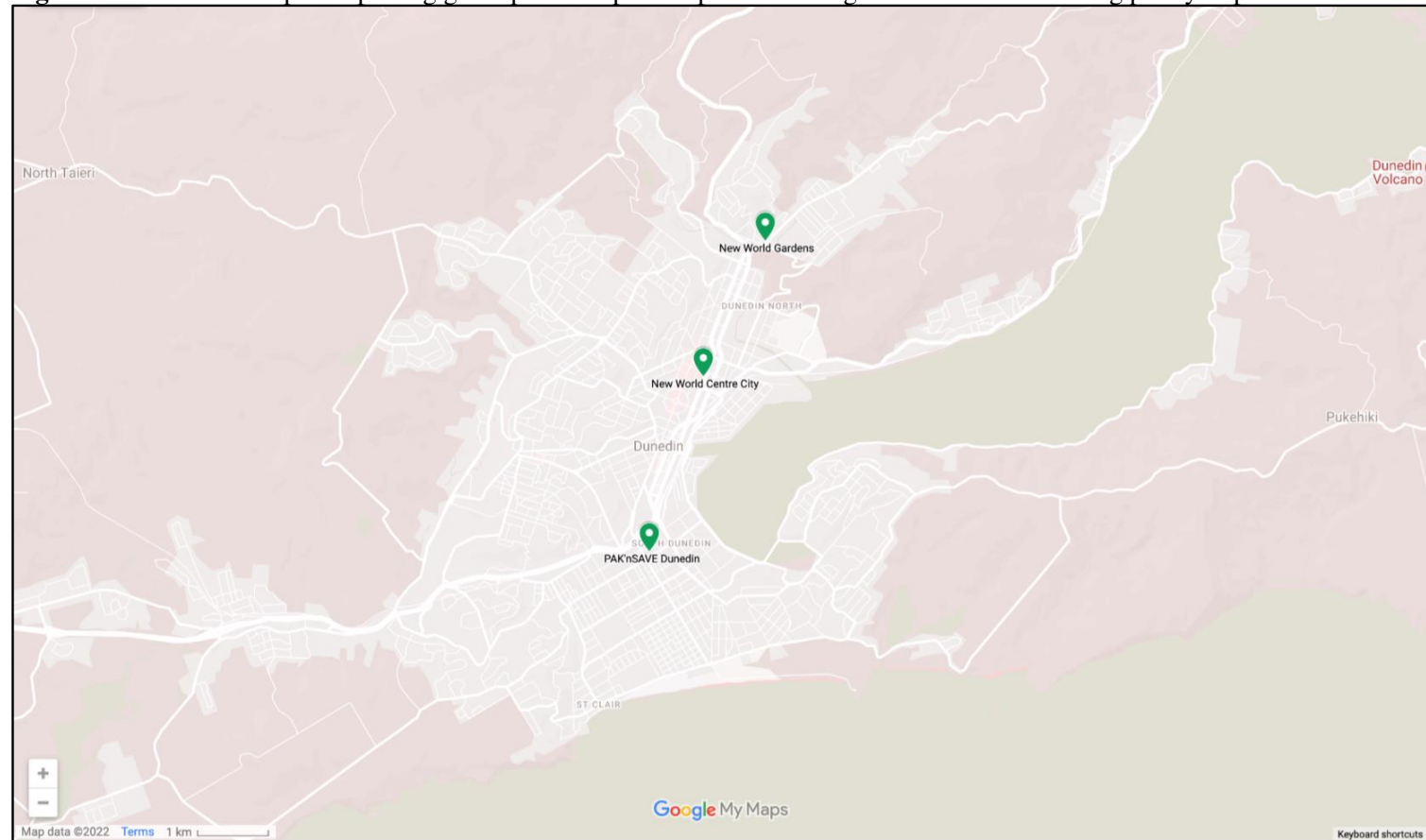
**Figure S1:** Dunedin sample map using blue pins to represent a participant's current preferred retailers



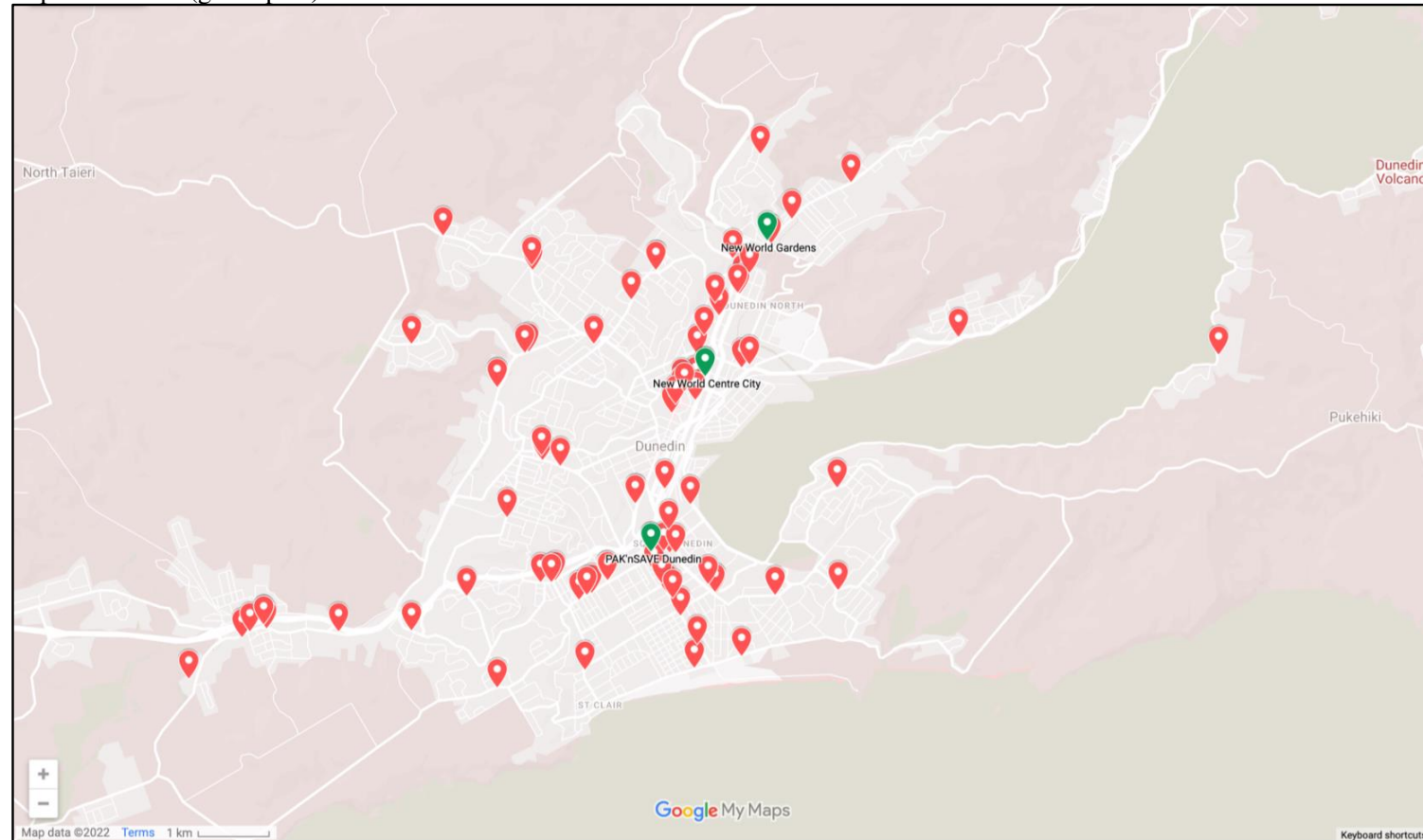
**Figure S2:** Dunedin sample map using red pins to represent all current tobacco retail outlets



**Figure S3:** Dunedin sample map using green pins to represent potential designated retailers following policy implementation



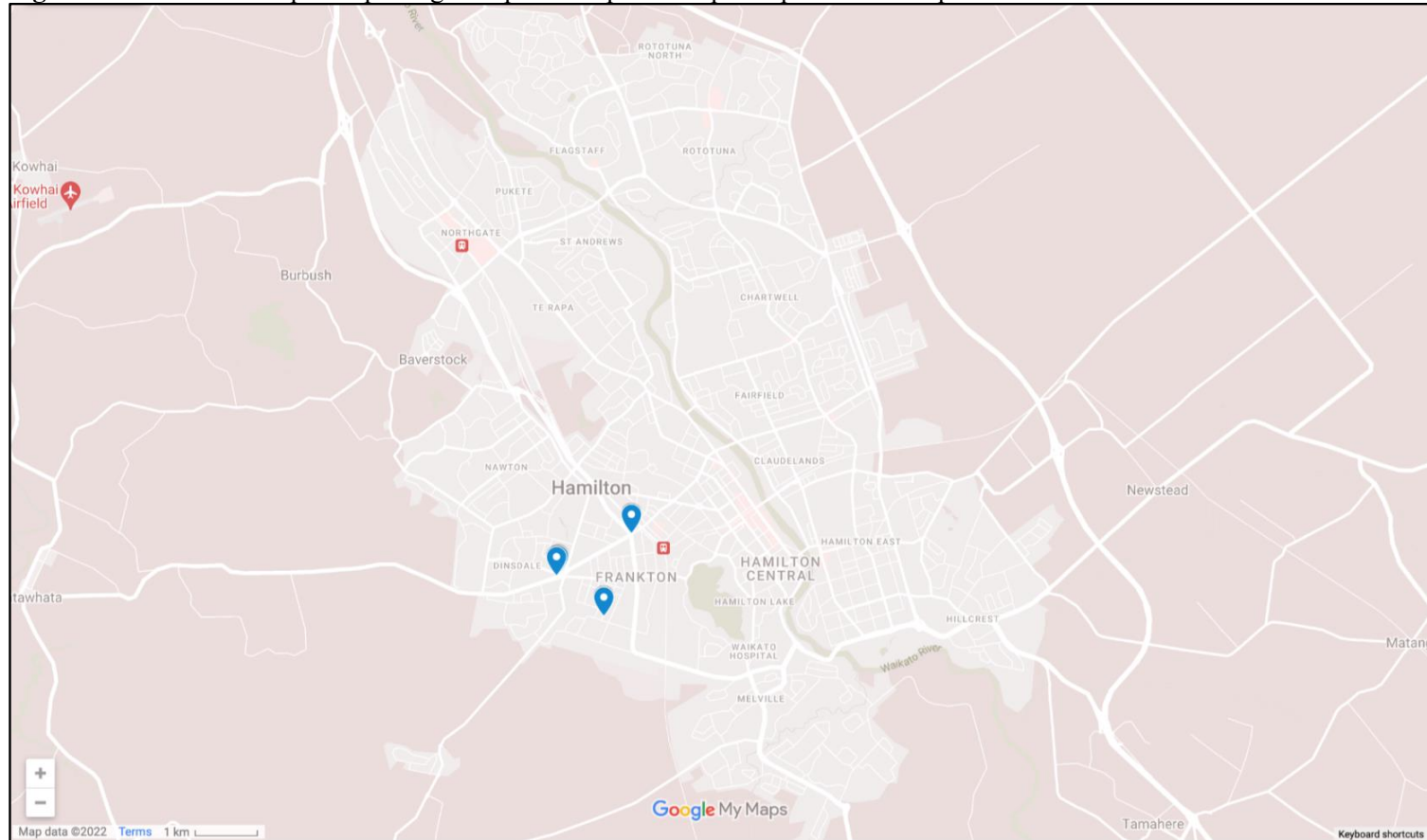
**Figure S4:** Dunedin sample map representing all current retail outlets (red pins) alongside potential designated retailers following policy implementation (green pins)



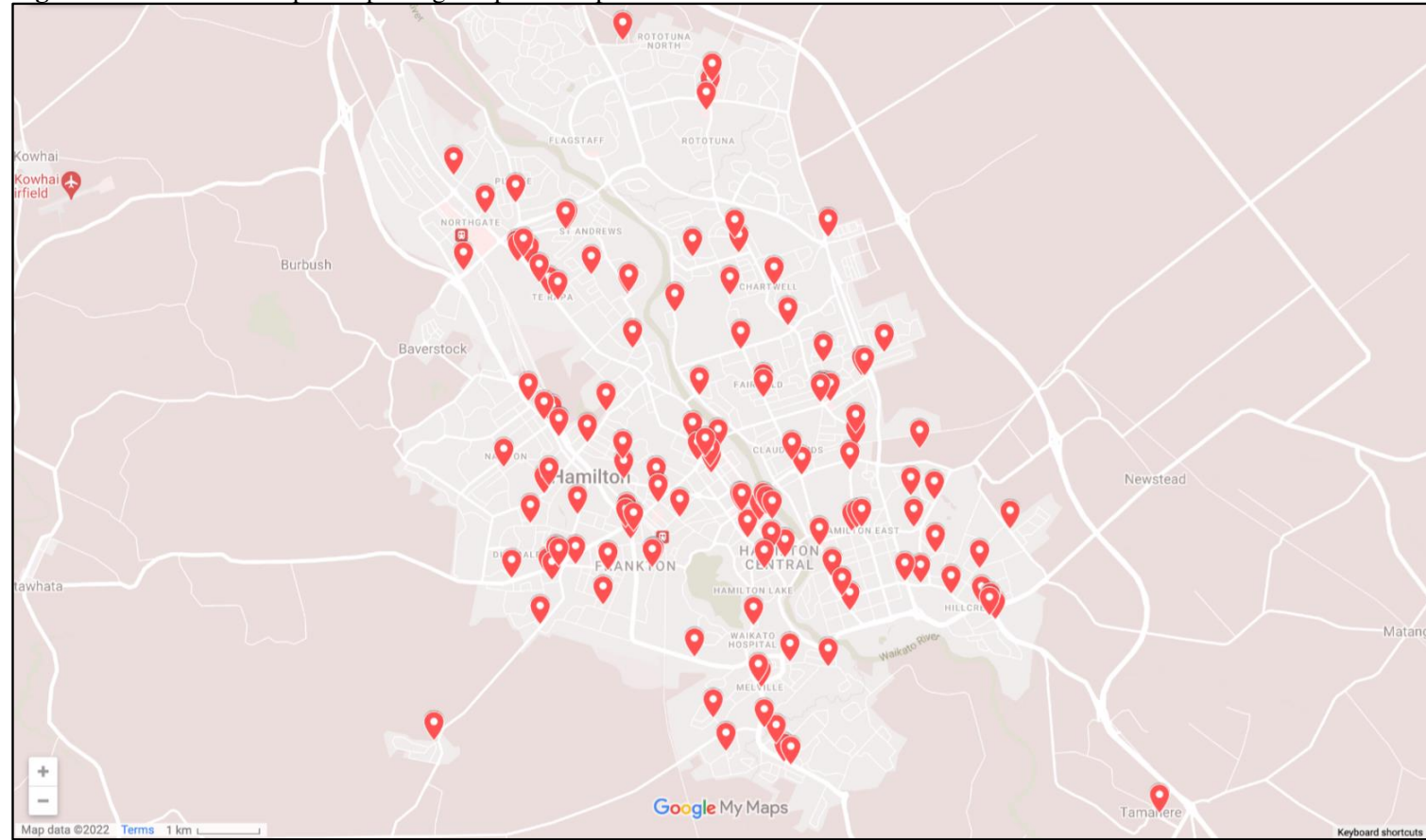


## Hamilton Sample Maps

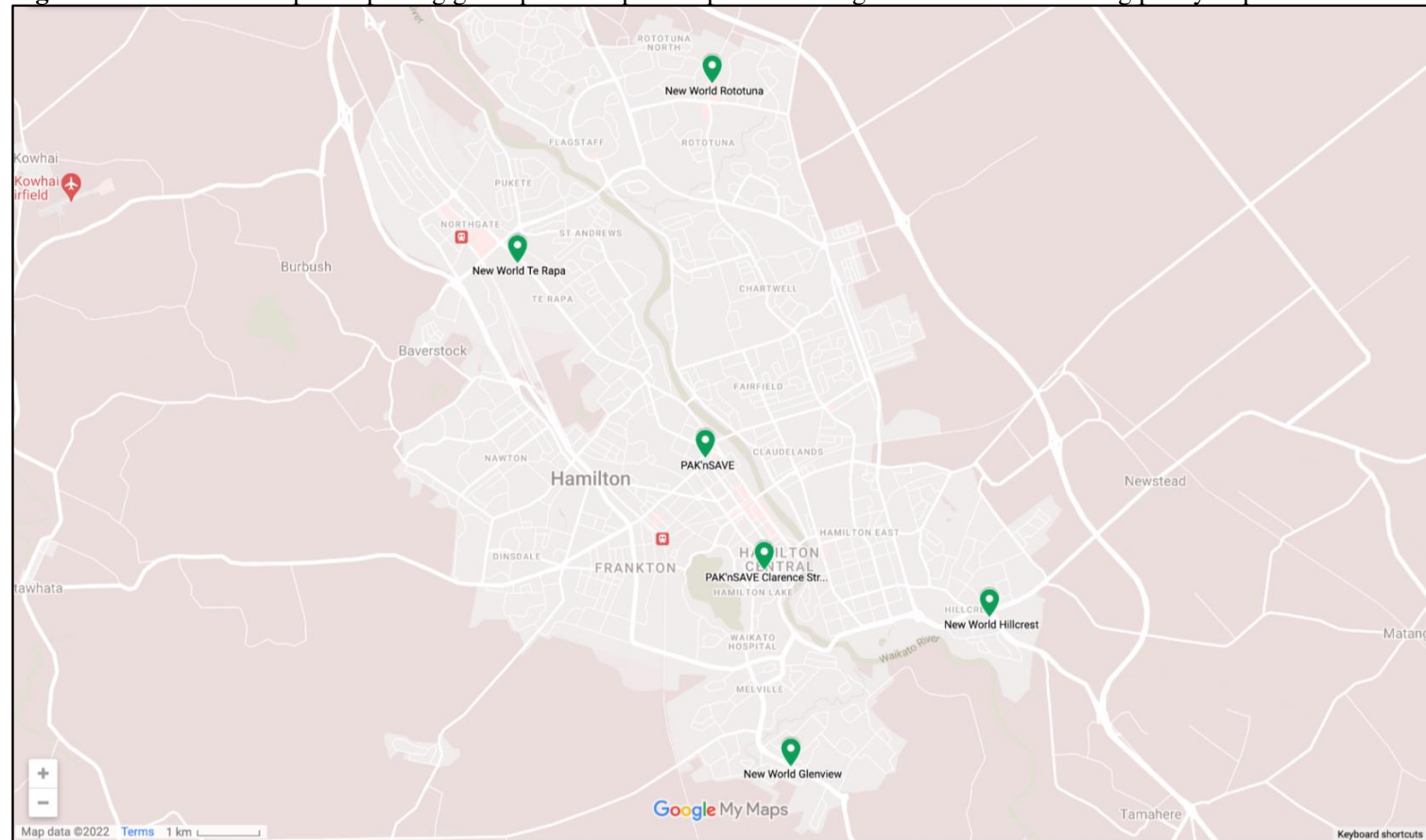
**Figure S5:** Hamilton sample map using blue pins to represent a participant's current preferred retailers



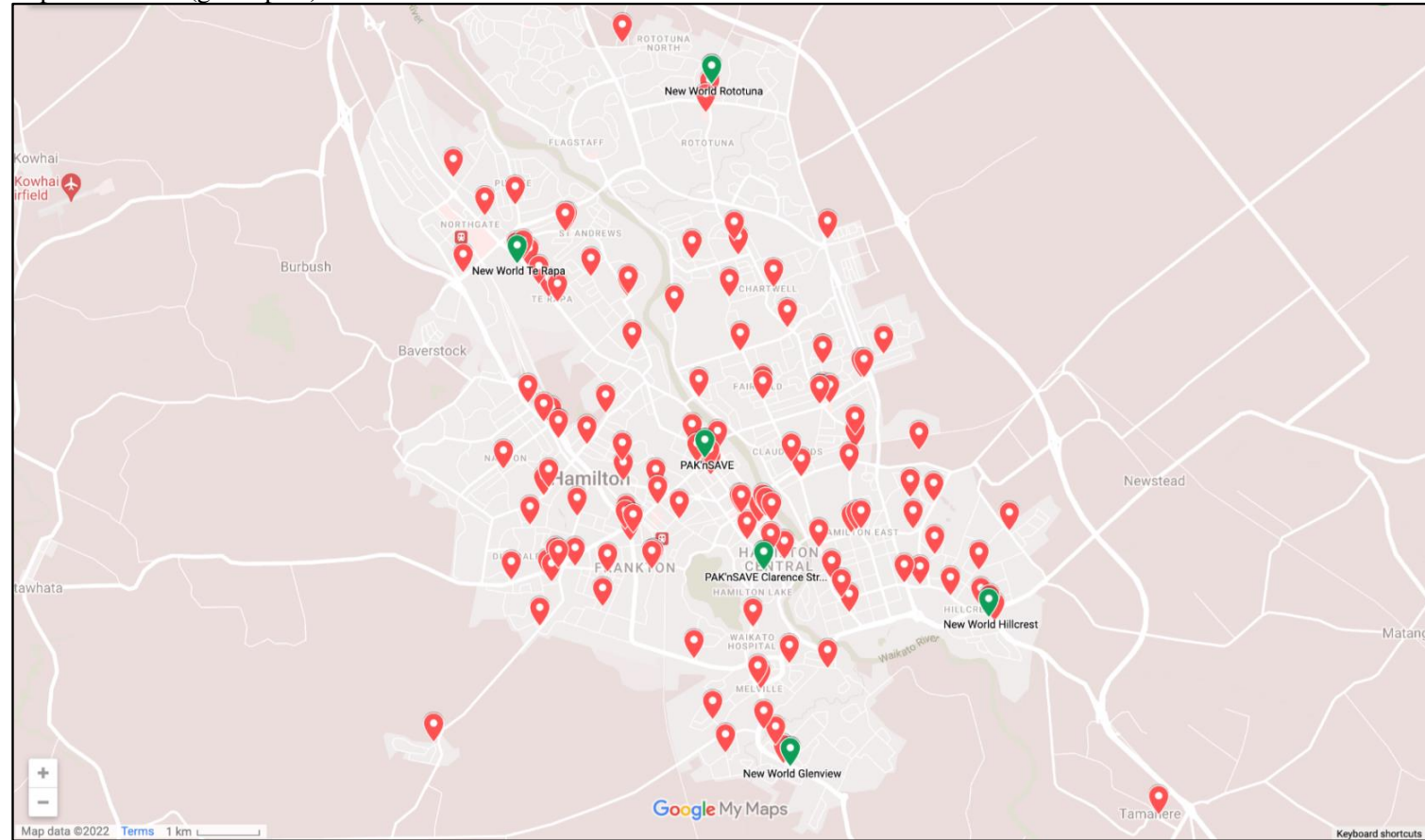
**Figure S6:** Hamilton sample map using red pins to represent all current tobacco retail outlets



**Figure S7:** Hamilton sample map using green pins to represent potential designated retailers following policy implementation



**Figure S8:** Hamilton sample map representing all current retail outlets (red pins) alongside potential designated retailers following policy implementation (green pins)



**REFERENCES**

- 1 Manatū Hauora Ministry of Health. Indicative Allocation of Stores Across New Zealand (Maps). New Zealand Government 2023. [https://www.health.govt.nz/system/files/documents/publications/supplementary\\_maps\\_-\\_indicative\\_allocation\\_of\\_stores\\_across\\_new\\_zealand.pdf](https://www.health.govt.nz/system/files/documents/publications/supplementary_maps_-_indicative_allocation_of_stores_across_new_zealand.pdf) (accessed 5 Jan 2023).