

**PRESENTING AUTHOR'S NAME & RESEARCH TITLE****Renee Robinson, PharmD, MPH, MSPharm, MBA**

Utilization of Geographic Information Systems to Assess Patient Access to Diabetes Self-Management Education and Support (DSMES)

**PURPOSE/BACKGROUND**

Pharmacists are the most accessible healthcare providers, capable of providing a wide range of healthcare services in the community setting. Pharmacists have the necessary clinical experience and medication knowledge to effectively provide diabetes self-management education and support (DSMES); however, barriers exist to DSMES implementation by community pharmacists. The objective of our study was to explore pharmacist availability to support and expand DSMES service availability, especially in rural and underserved communities.

**MATERIALS & METHODS**

A geospatial analysis was conducted to determine distance and drive time to community pharmacies. Pharmacy and Diabetes Self-Management Education and Support (DSMES) program locations were provided in a spreadsheet format containing the name and physical address of each site. These addresses were converted into point GIS feature class layers using the Geocode Addresses tool in ArcGIS Pro. A five-mile buffer polygon feature class was created around each point location using the Create Buffers tool. Census block data for the 2020 census was acquired from the US Census Bureau and converted into a polygon feature class. Using the Select by Location tool, census block polygons that intersected the buffer polygons were identified. The sum of the population was calculated from this selection and used as a basic indicator of the availability of pharmacies and DSMES sites to the citizens of Idaho. Program addresses were collected from the Idaho Department of Health and Welfare, diabetes programs, and related foundation websites. Addresses were converted into point GIS feature class layers using the Geocode Addresses tool in ArcGIS Pro. Census block data for the 2020 census was acquired from the United States Census Bureau and was joined to the census block data. The sum of the population was calculated and used as a basic indicator of pharmacy availability to each state's residents. To determine drive time to community pharmacies, proximity was determined using the Generate Drive Time Trade Areas tool in ArcGIS Pro (5-, 10-, 15-, and 30-minute interval). Similar to the Euclidean distance buffer polygons described above, these polygons were used to select the underlying Census block polygons using the Select by Location tool. This process was done iteratively however, once for all 5-minute drive time polygons, and then again for the 10-minute, 15-minute, etc. drive times resulting in six sets of selections. The sum of the population was calculated from these selections and used to indicate the availability of pharmacies and DSMES sites to the citizens of Idaho. Statistics were graphed to aid in data visualization showing the population within a given proximity of pharmacy and DSMES sites as well as the percent of Idaho citizens within proximity of these sites.

**RESULTS**

Based on the 2020 census there are 1,839,106 people in Idaho of which 1,576,573 Idahoans (86%) live within five miles of a pharmacy. (See Figure 1, 2 in page 2)

**DISCUSSION/CONCLUSION**

Every year an estimated 12,690 people in Idaho are diagnosed with diabetes. An estimated 10.3 percent of Idahoans, 137,000 Idaho adults, live with diabetes. Those with diabetes are twice as likely to have heart disease or stroke. People with diabetes have medical expenses approximately 2.3 times higher than those who do not have diabetes. As community needs become more extensive, especially in light of the pandemic, the demand for responsive, accessible, equitable healthcare continues to grow. DSMES has been shown to decrease cost and improve health; however, not all qualified and readily accessible healthcare providers (e.g., pharmacists) are being reimbursed for DSMES services.

# RESULTS

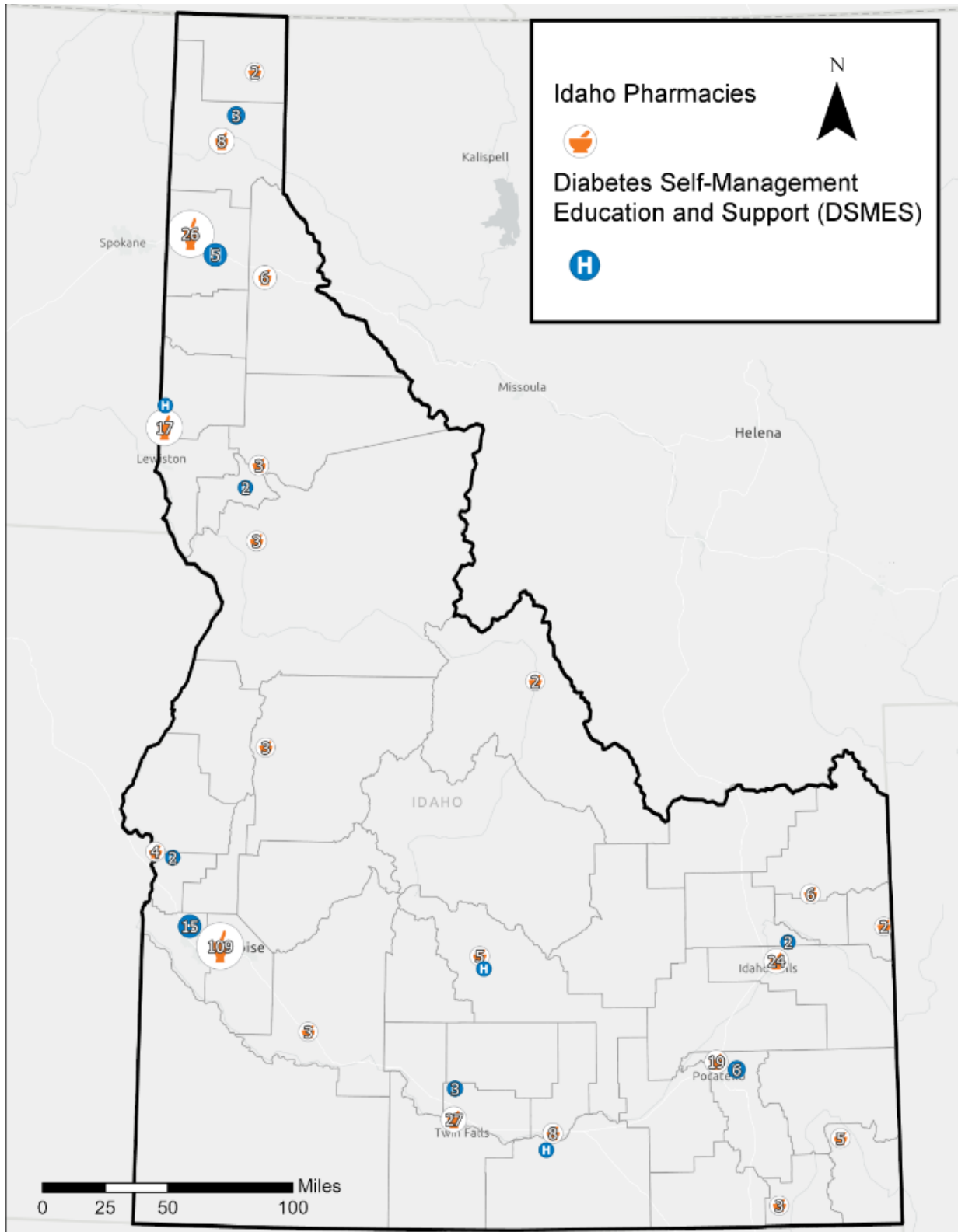


Figure 1

# RESULTS

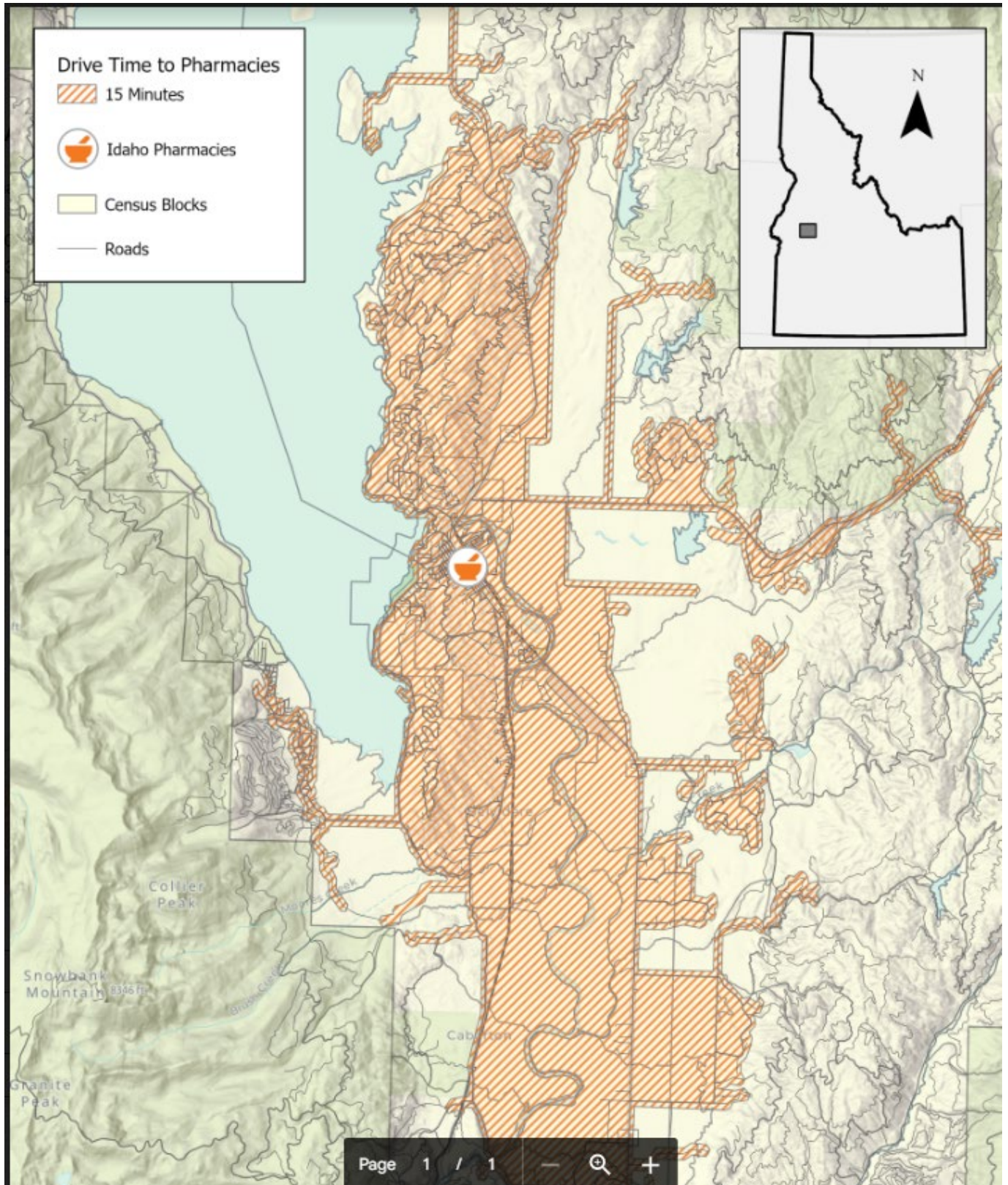


Figure 2