

EPPS 6354.001 Project Proposal:
A Veterinary Diabetic Assistance Database

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Database Purpose

The envisioned end-users of this database are veterinarians, or those working in a clinical capacity in the provision of veterinary services. The database will store and make easily accessible diagnostic biometrics of diabetic canines when they attend a veterinary clinic, along with key relevant socio-demographic variables of their legal owners. This will assist with the ability to prognose and enhance the treatment of canine aliment *diabetes mellitus* (Sapra and Bhandari 2023) and provide a basis from which to track correlations between social status and a selected avenue of health provision.

Schema

The schema design for this database is visible in Figure 1.

There are five tables associated with this schema. ‘demographics’, ‘k-9’, ‘biometrics’, ‘owner’, and ‘visit’.

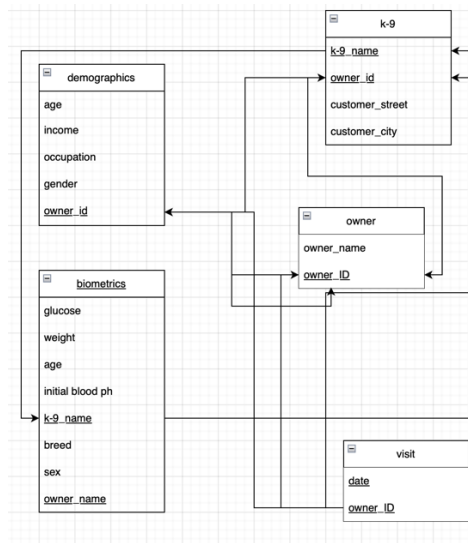


Figure 1

Two tables, ‘demographics’ and ‘owner’, each have one attribute serve as their primary key, and the three other tables have two attributes compose their composite primary keys. The primary

key for 'owner' is 'owner_ID', which has foreign-key constraint relationship with 'demographics', 'k-9' and 'visit'. The primary key for 'demographics' is 'owner_ID', and possesses a foreign-key constraint with 'owner', 'k-9', and 'visit'.

The primary key for relation 'visit' is composed of 'date' and 'owner_ID'. This is because there is expected to be more than one visitor per day, so 'owner_ID' helps uniquely identify these tuples. The relation also possesses foreign-key constraint relations with 'owner', 'k-9', and 'demographics'. The relation 'k-9' has the attributes 'owner_id' and 'k-9_name' serve as its primary keys. This is because more than one dog may have the same name. 'k-9' possesses foreign-key constraint relations with 'owner', 'demographics', 'visit', and 'biometrics'. Finally, the relation 'biometrics' primary key is composed of the attributes 'k-9_name' and 'owner_name'. Again, this is because more than one dog may share a name. 'biometrics' possesses a foreign-key constraint relationship with the relation 'k-9'.

This schema should serve the monitoring needs of a single veterinary clinic. Although it could be scaled up to a network of such clinics if need be. For instance, the addition of a relation containing records of branch locations can be integrated into the schema to properly account for any additional 'franchise' node of such practices dispersed throughout an area.

Interface

The database is expected to be accessible and utilized via the pgAdmin 4 IDE for PostgreSQL.¹

Methods to be Employed

¹ PostgreSQL version 16 or 17 will be used for this project.

This database will be built in PostgreSQL. Individual canine data (weight, glucose levels, etc.) will be pseudo-randomly generated, but bounded by ranges reported in the relevant scientific literature. Demographic data will be pulled from convenience samples of U.S. citizens residing within the contiguous U.S. from data repositories hosted by the U.S. Census Bureau (Bureau 2025). Data tables will be generated/collected and stored on .csv files before importation into PostgreSQL.

References

- Sapra, Amit, and Priyanka Bhandari. 2025. "Diabetes." In *StatPearls*, Treasure Island (FL): StatPearls Publishing. <http://www.ncbi.nlm.nih.gov/books/NBK551501/> (February 1, 2025).
- Bureau, US Census. "Data." *Census.gov*. <https://www.census.gov/data> (February 1, 2025).