Supplementary Material S2—Results stratified by career stage and work community.

Analysis of career stage (early [veterinary school graduation year 2016-2020], mid [graduation year 2005-2015], or late [graduation year prior to 2005]) and work community (self-reported as urban, suburban, rural, or wilderness) follows by objective, survey question, food-producing species then non-food producing species. Only statistically significant differences (p<0.05) are reported.

Objective 1: Veterinarians’ knowledge and practices regarding disposal of euthanized animals

Question # 10:

Career stage:

Food-producing species:

Mid-career veterinarians euthanizing only food-producing species more frequently reported the client takes responsibility for appropriate disposal of sheep and goats than did their late-career colleagues. Early-career veterinarians euthanizing mixed species more frequently reported a facility takes responsibility for disposal of farmed avian than did their mid- and late-career colleagues.

Non-food producing species:

Mid- and late-career veterinarians euthanizing only non-food producing species more frequently reported the veterinarian takes responsibility for appropriate animal disposal than did their early-career colleagues. Mid-career veterinarians euthanizing only non-food producing species reported more frequently a facility takes responsibility for appropriate disposal...
disposal of zoo animals than did their early-career colleagues; and reported a facility takes responsibility for appropriate disposal of wildlife than did their late-career colleagues.

Mid-career veterinarians euthanizing mixed species more frequently reported the client takes responsibility for appropriate disposal of dogs, cats, and equids than did their late-career colleagues.

Late-career veterinarians euthanizing mixed species more frequently reported a facility takes responsibility for appropriate disposal of rodents than did their early-career colleagues.

Mid-career veterinarians euthanizing mixed species also more frequently reported a facility takes responsibility for appropriate disposal of small exotics than did their late-career colleagues; and also more frequently reported the veterinarian takes responsibility for appropriate disposal of wildlife than did their late-career colleagues.

Community:

Food-producing species:

The client was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in suburban and rural/wilderness communities than those in urban communities for bison/cattle, farmed avian, farmed camelids/cervids, sheep/goats, and swine.

The client was also more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in rural/wilderness communities than those in suburban communities for sheep, goats, and swine.

The veterinarian was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in urban communities than those in rural/wilderness communities.
communities for bison/cattle, farmed avian, and sheep/goats. The veterinarian was also more frequently reported by veterinarians euthanizing mixed species in urban communities than those in suburban communities for bison/cattle. The veterinarian was also more frequently reported by veterinarians euthanizing mixed species in suburban communities than those in rural/wilderness communities for farmed avian, sheep, and goats.

A facility was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in urban and suburban communities than those in rural/wilderness communities for bison/cattle, sheep/goats, and swine. A facility was also more frequently reported by veterinarians euthanizing mixed species in urban communities than those in rural/wilderness communities for farmed avian. A facility was more frequently reported by veterinarians euthanizing mixed species in suburban communities than those in rural/wilderness communities for farmed camelids/cervids; and was also more frequently reported by veterinarians euthanizing mixed species in urban communities than those in suburban communities for swine.

**Non-food producing species:**

The client was more frequently reported as the responsible party for disposal by veterinarians euthanizing non-food producing species in rural/wilderness communities than those in urban communities for dogs, cats, equids, small exotics, and wildlife. The client was also more frequently reported by veterinarians euthanizing non-food producing species in suburban communities than those in urban communities for equids; and was more frequently reported...
by veterinarians in rural/wilderness communities than those in urban or suburban communities for dogs, cats, and wildlife.

The *veterinarian* was more frequently reported as the responsible party for disposal by veterinarians euthanizing non-food producing species in suburban communities than those in rural/wilderness communities for equids.

A *facility* was more frequently reported as the responsible party for disposal by veterinarians euthanizing non-food producing species in urban and suburban communities than those in rural/wilderness communities for dogs, cats, and equids; a *facility* was more frequently reported by these non-food producing veterinarians in urban communities than those in suburban communities for dogs, cats, equids, ornamental fish, small exotics, rodents, and wildlife; and was more frequently reported by these veterinarians in urban communities than those in rural/wilderness communities for small exotics.

**Mixed species:**

The *client* was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in suburban and rural/wilderness communities than those in urban communities for dogs, cats, equids, non-human primates, rodents, and small exotics. The *client* was also more frequently reported by mixed species veterinarians in rural/wilderness communities than those in urban communities for ornamental fish and wildlife; and was more frequently reported by mixed species veterinarians in rural/wilderness communities than those in suburban communities for zoo animals.
The *veterinarian* was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in urban communities than those in suburban and rural/wilderness communities for equids. The *veterinarian* was also more frequently reported by mixed species veterinarians in urban and suburban communities than those in rural/wilderness communities for wildlife; and was more frequently reported by mixed species veterinarians in suburban communities than those in rural/wilderness communities for zoo animals.

*A facility* was more frequently reported as the responsible party for disposal by veterinarians euthanizing mixed species in urban and suburban communities than those rural/wilderness communities for dogs, cats, equids, non-human primates, and small exotics. A *facility* was also more frequently reported by mixed species veterinarians in urban communities than those in suburban communities for dogs, cats, rodents, and small exotics; and was also more frequently reported by mixed species veterinarians in suburban communities than those in rural/wilderness communities for wildlife and zoo animals. A *facility* was also more frequently reported by mixed species veterinarians in suburban communities than those in urban communities for zoo animals.

**Question # 11:**

**Career stage:**

**Food-producing species:**

Mid-career mixed species veterinarians more frequently reported awareness of *rendering* as a disposal option for pentobarbital-euthanized bison/cattle and swine than did their late-career
colleagues. Late-career mixed species veterinarians more frequently reported awareness of a *biodigester* as a disposal option for pentobarbital-euthanized bison/cattle, farmed avian, and sheep/goats than did their early-career colleagues. Mid-career mixed species veterinarians more frequently reported awareness of *burial* as an option for pentobarbital-euthanized farmed avian than their early-career colleagues. Late-career mixed species veterinarians more frequently reported awareness of *composting* as an option for pentobarbital-euthanized sheep/goat and swine than their mid-career colleagues.

**Non-food producing species:**

Mid-career veterinarians euthanizing only non-food producing species more frequently reported being aware of *incineration* as an option for pentobarbital-euthanized equids than did either their early- or late-career colleagues. Early-career veterinarians euthanizing only non-food producing species more frequently reported awareness of *burial* as an option for pentobarbital-euthanized non-human primates than did either their mid- or late-career colleagues. Early-career veterinarians euthanizing only non-food producing species more frequently reported awareness of *rendering* as an option for pentobarbital-euthanized rodents than their mid- or late-career colleagues.

**Mixed species:**

Early-career mixed species veterinarians more frequently reported awareness of *burial* as an option for pentobarbital-euthanized dogs and cats than did their mid- and late-career colleagues. Mid- and late-career mixed species veterinarians more frequently reported awareness of a *biodigester* as an option for pentobarbital-euthanized dogs and cats than did their early-career colleagues. Mid-career mixed species veterinarians more frequently reported awareness of a *biodigester* as an option for pentobarbital-euthanized dogs and cats than did their early-career colleagues. Mid-career mixed species veterinarians more frequently reported awareness of a *biodigester* as an option for pentobarbital-euthanized dogs and cats than did their early-career colleagues.
being aware of rendering and incineration as options for pentobarbital-euthanized equids than did their late-career colleagues. Early- and mid-career mixed species veterinarians more frequently reported being aware of burial as an option for pentobarbital-euthanized rodents than did their late-career colleagues.

**Community:**

**Food-producing species:**

Awareness of burial as an option for pentobarbital-euthanized bison/cattle, farmed avian, sheep, goats, and swine was more frequently reported by veterinarians euthanizing mixed species in suburban and rural/wilderness communities than by their colleagues in urban communities. Awareness of burial as an option for pentobarbital-euthanized farmed camelids/cervids, sheep, goats, and swine was more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than their colleagues in suburban communities; and awareness of burial as an option for pentobarbital-euthanized farmed camelids/cervids was more frequently reported by mixed species veterinarians in rural/wilderness communities than those in urban communities.

Awareness of incineration as an option for pentobarbital-euthanized sheep, goats, and swine was more frequently reported by veterinarians euthanizing mixed species in urban and suburban communities than by those in rural/wilderness communities. Awareness of biodigester as an option for pentobarbital-euthanized bison/cattle was more frequently reported by veterinarians euthanizing mixed species in urban communities than those in suburban and rural/wilderness communities; and biodigester awareness was more frequently
reported by these veterinarians euthanizing sheep/goats in urban communities than those in rural/wilderness communities.

Awareness of *composting* as an option for pentobarbital-euthanized farmed avian, sheep, goats, and swine was more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in urban communities; and was more frequently reported by mixed species veterinarians euthanizing these same species in rural/wilderness communities than those in suburban communities.

**Non-food producing species:**

Awareness of *burial* as an option for pentobarbital-euthanized dogs, cats, small exotics, and rodents was more frequently reported by non-food producing species veterinarians in suburban and rural/wilderness communities than those in urban communities; *burial* as an option for pentobarbital-euthanized dogs and cats was also more frequently reported by non-food producing species veterinarians in rural/wilderness communities than those in suburban communities. Awareness of *burial* as an option for pentobarbital-euthanized ornamental fish and wildlife was more frequently reported by non-food producing species veterinarians in suburban communities than those in urban communities.

Awareness of *incineration* as an option for pentobarbital-euthanized dogs, cats, and equids was more frequently reported by non-food producing species veterinarians in suburban communities than those in rural/wilderness communities. Awareness of *biodigester* as an option for pentobarbital-euthanized small exotics was more frequently reported by non-food producing species veterinarians in suburban communities than those in urban communities.
producing species veterinarians in suburban communities than those in rural/wilderness communities.

Awareness of composting as an option for pentobarbital-euthanized equids was more frequently reported by non-food producing species veterinarians in rural/wilderness communities than those in suburban communities.

**Mixed species:**

Awareness of burial as an option for pentobarbital-euthanized dogs, cats, equids, rodents, small exotics, and wildlife was more frequently reported by veterinarians euthanizing mixed species in suburban and rural/wilderness communities than those in urban communities; and awareness of burial was also more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in suburban communities for the same species. Awareness of burial as an option for pentobarbital-euthanized non-human primates was more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in urban and suburban communities. Awareness of burial as an option for pentobarbital-euthanized zoo animals was more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in urban communities.

Awareness of biodigester as an option for pentobarbital-euthanized dogs, cats, small exotics, and wildlife was more frequently reported by veterinarians euthanizing mixed species in urban communities than those in suburban communities; and awareness of biodigester was more frequently reported by veterinarians euthanizing dogs, cats, and small exotics in urban communities than those in rural/wilderness communities.
Awareness of *incineration* as an option for pentobarbital-euthanized equids, rodents, small exotics, and wildlife was more frequently reported by veterinarians euthanizing mixed species in suburban communities than those in rural/wilderness communities.

Awareness of *composting* as an option for pentobarbital-euthanized rodents and small exotics was more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in urban communities; awareness of *composting* as an option for pentobarbital-euthanized small exotics, ornamental fish, and wildlife was also more frequently reported by veterinarians euthanizing mixed species in rural/wilderness communities than those in suburban communities.

**Question #12:**

*Career stage:*

*Food-producing species:*

Career stage differences for veterinarians only euthanizing food-producing species were not detected. Mid-career mixed species veterinarians more frequently reported using or recommending *rendering* of pentobarbital-euthanized bison/cattle and swine than did their late-career colleagues. Early-career mixed species veterinarians more frequently reported using or recommending *incineration* of pentobarbital-euthanized swine than did their late-career colleagues. Late-career mixed species veterinarians more frequently reported using or recommending *composting* of pentobarbital-euthanized bison/cattle than did their early-career colleagues.

*Non-food producing species:*

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Late-career veterinarians euthanizing only non-food producing species more frequently reported using or recommending a biodigester for pentobarbital-euthanized dogs and cats than did their mid-career colleagues.

**Mixed species:**

Early- and mid-career veterinarians euthanizing mixed species more frequently reported using or recommending burial of pentobarbital-euthanized rodents than did their late-career colleagues. Mid-career veterinarians euthanizing mixed species more frequently reported using or recommending incineration of pentobarbital-euthanized small exotics than did their late-career colleagues.

**Community:**

**Food-producing species:**

Mixed species veterinarians in suburban communities more frequently reported using or recommending rendering of pentobarbital-euthanized farmed camelids/cervids than did their colleagues in rural/wilderness communities. Mixed species veterinarians in suburban and rural/wilderness communities more frequently reported using or recommending burial of pentobarbital-euthanized bison/cattle, farmed avian, farmed camelids/ cervids, sheep/goats, and swine than did their urban counterparts. Mixed species veterinarians in rural/wilderness communities also more frequently reported using or recommending burial of pentobarbital-euthanized farmed avian, sheep/goats, and swine than did their suburban colleagues.

Mixed species veterinarians in urban communities more frequently reported using or recommending incineration of pentobarbital-euthanized bison/cattle, sheep/goats, and swine than did their rural/wilderness colleagues. Mixed species veterinarians in suburban
communities also more frequently reported using or recommending incineration of pentobarbital-euthanized farmed avian, sheep, goats, and swine than did their rural/wilderness colleagues. Mixed species veterinarians in urban communities more frequently reported using or recommending incineration of pentobarbital-euthanized swine than did their suburban colleagues. Mixed species veterinarians in urban communities more frequently reported using or recommending a biodigester for pentobarbital-euthanized bison/cattle, and sheep, goats, than did their rural/wilderness colleagues.

Mixed species veterinarians in rural/wilderness communities more frequently reported composting of pentobarbital-euthanized farmed avian than did their suburban colleagues.

Mixed species veterinarians in both suburban and rural/wilderness communities more frequently reported using or recommending composting of pentobarbital-euthanized sheep, goats, and swine than did their urban colleagues.

**Non-food producing species:**

Non-food producing species veterinarians in suburban and rural/wilderness communities more frequently reported using or recommending burial of pentobarbital-euthanized dogs, cats, and small exotics than did those in urban communities. Non-food producing species veterinarians in rural/wilderness communities also more frequently reported using or recommending burial of pentobarbital-euthanized equids, rodents, and zoo animals than did their urban colleagues.

Non-food producing species veterinarians in rural/wilderness communities more frequently reported using or recommending burial of pentobarbital-euthanized equids, dogs, cats, and small exotics than did their suburban colleagues.

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Non-food producing species veterinarians in urban and suburban communities more frequently reported using or recommending *incineration* of pentobarbital-euthanized equids, dogs, and cats, than did their rural/wilderness colleagues. Non-food producing species veterinarians in rural/wilderness communities more frequently reported using or recommending *composting* of pentobarbital-euthanized dogs and cats, than did their urban colleagues.

**Mixed species:**
Mixed species veterinarians in suburban and rural/wilderness communities more frequently reported using or recommending *burial* of pentobarbital-euthanized dogs, cats, equids, rodents, and small exotics than did their urban colleagues. Mixed species veterinarians in rural/wilderness communities more frequently reported using or recommending burial of pentobarbital-euthanized non-human primates, wildlife, and zoo animals than did their urban colleagues. Mixed species veterinarians in rural/wilderness communities more frequently reported using or recommending *burial* of pentobarbital-euthanized dogs, cats, equids, non-human primates, rodents, small exotics, wildlife, and zoo animals than did their suburban colleagues.

Mixed species veterinarians in urban and suburban communities more frequently reported using or recommending *incineration* of pentobarbital-euthanized equids, rodents, and wildlife, than did their rural/wilderness colleagues; and mixed species veterinarians in suburban communities more frequently reported using or recommending *incineration* of pentobarbital-euthanized rodents, than did their rural/wilderness colleagues.

Mixed species veterinarians in rural/wilderness communities more frequently reported using or recommending *composting* of pentobarbital-euthanized ornamental fish and small exotics than
did their suburban colleagues; and more frequently reported using or recommending
composting of pentobarbital-euthanized rodents, than did their urban colleagues. Mixed
species veterinarians in urban communities more frequently reported using or recommending a
biodigester for pentobarbital-euthanized small exotics than their rural/wilderness colleagues.

Objective 2: Veterinarians’ client communications of rendering pentobarbital-euthanized animals

Question #15a:

Career stage:

Differences in responses to this statement were not detected by career stage.

Community:

Non-food producing species veterinarians euthanizing animals in urban communities more
frequently reported neither agree nor disagree than did their counterparts in rural/wilderness
communities.

Mixed species veterinarians euthanizing animals in suburban and rural/wilderness communities
more frequently reported agree and strongly agree than did their counterparts in urban
communities. Mixed species veterinarians in rural/wilderness communities also more
frequently reported agree and strongly agree than did their counterparts in suburban
communities. Mixed species veterinarians euthanizing animals in urban and suburban
communities more frequently reported neither agree nor disagree than did their counterparts in rural/wilderness communities; and mixed species veterinarians in urban communities more
frequently reported disagree than their rural/wilderness community counterparts.

Question #15b:
Career stage: Late-career mixed species veterinarians more frequently reported neither agree nor disagree than did their mid-career counterparts. Mid-career mixed species veterinarians more frequently reported strongly disagree than did their early-career counterparts.

Community: Non-food producing species veterinarians in rural/wilderness communities more frequently reported agree and strongly agree than did their urban community counterparts. Non-food producing species veterinarians in urban communities more frequently reported neither agree nor disagree than did their rural/wilderness community counterparts. Mixed species veterinarians euthanizing animals in suburban and rural/wilderness communities more frequently reported agree and strongly agree than did their urban community counterparts. Mixed species veterinarians in rural/wilderness communities more frequently reported agree and strongly agree than did their suburban community counterparts. Mixed species veterinarians euthanizing mixed species in urban and suburban communities more frequently reported both neither agree nor disagree and disagree than did their rural/wilderness community counterparts.

Question #15c:

Career stage: Differences in responses to this statement were not detected by career stage for veterinarians euthanizing only food-producing species. Early- and mid-career mixed species veterinarians more frequently reported disagree than did their late-career colleagues.

Community: Non-food producing species veterinarians in urban communities more frequently reported agree and strongly agree than did their suburban community colleagues. Mixed species veterinarians euthanizing animals in urban and suburban communities more frequently reported disagree than did their rural/wilderness community counterparts.
Question #15d:

Career stage: Early- and mid-career mixed species veterinarians more frequently reported disagree than did their late-career colleagues. Late-career mixed species veterinarians more frequently reported neither agree nor disagree than did their early-career colleagues.

Community: Non-food producing species veterinarians in urban communities more frequently reported agree and strongly agree than did their suburban community colleagues. Non-food producing species veterinarians in suburban communities more frequently reported disagree than did their urban community colleagues; and non-food producing species veterinarians in rural/wilderness communities more frequently reported strongly disagree than did either their suburban or urban community counterparts. Mixed species in urban and suburban communities more frequently reported disagree than did their rural/wilderness community colleagues. Mixed species in rural/wilderness communities more frequently reported neither agree nor disagree than did their suburban community colleagues.

Objective 3: Client communication regarding relay toxicosis, rendering, and environmental risks.

Question #16a:

Career stage: Differences in responses were not detected by career stage for veterinarians only euthanizing food-producing species. Late-career mixed species veterinarians more frequently reported sometimes and never than did their mid-career veterinary colleagues.

Community: Non-food producing species veterinarians euthanizing animals in rural/wilderness communities more frequently reported always and most of the time than did
their colleagues in either urban or suburban communities. Non-food producing species veterinarians euthanizing animals in rural/wilderness communities also more frequently reported about half the time than did their urban community colleagues. Non-food producing species veterinarians euthanizing animals in urban and suburban communities more frequently reported sometimes and never than did their colleagues in rural/wilderness communities. Mixed species veterinarians euthanizing animals in suburban and rural/wilderness communities more frequently reported always and most of the time than did their colleagues in urban communities. Mixed species veterinarians in rural/wilderness communities also more frequently reported always and most of the time than did their colleagues in suburban communities. Mixed species veterinarians euthanizing animals in urban and suburban communities more frequently reported sometimes and never than did their colleagues in rural/wilderness communities. Mixed species veterinarians euthanizing animals in urban communities also more frequently reported sometimes and never than did their colleagues in suburban communities.

**Question #16b:**

**Career stage:** Mid-career non-food producing species veterinarians more frequently reported sometimes and never than did their late-career veterinary colleagues. Late-career non-food producing species veterinarians more frequently reported I don’t use pentobarbital than did their mid-career veterinary colleagues. Late-career mixed species veterinarians more frequently reported always and most of the time than did their mid-career veterinary colleagues. Mid-career mixed species veterinarians more
frequently reported *sometimes, never, and about half the time* than did their late-career veterinary colleagues.

**Community:** Food-producing species veterinarians in rural/wilderness communities more frequently reported *I don’t use pentobarbital* than did their colleagues in suburban communities.

Non-food producing species veterinarians euthanizing animals in rural/wilderness communities more frequently reported *always and most of the time* than did their colleagues in either urban or suburban communities. Non-food producing species veterinarians euthanizing animals in urban and suburban communities more frequently reported *sometimes and never* than did their colleagues in rural/wilderness communities. Non-food producing species veterinarians euthanizing animals in urban communities more frequently reported *I don’t use pentobarbital* than did their colleagues in suburban communities.

Mixed species veterinarians euthanizing animals in suburban and rural/wilderness communities more frequently reported *always and most of the time* than did their colleagues in urban communities. Mixed species veterinarians euthanizing animals in rural/wilderness communities also more frequently reported *always and most of the time* than did their colleagues in suburban communities. Mixed species veterinarians euthanizing animals in urban and suburban communities more frequently reported *sometimes and never* than did their colleagues in rural/wilderness communities. Mixed species veterinarians euthanizing animals in urban communities also more frequently reported *sometimes and never* than did their colleagues in suburban communities.
**Question #16c:**

*Career stage:* Late-career non-food producing species veterinarians more frequently reported *I don’t use pentobarbital* than did their mid-career veterinary colleagues.

*Community:* Food-producing species veterinarians euthanizing animals in rural/wilderness communities more frequently reported *I don’t use pentobarbital* than did their colleagues in suburban communities.

Non-food producing species veterinarians euthanizing animals in urban communities more frequently reported *I don’t use pentobarbital* than did their suburban colleagues.

Mixed species veterinarians euthanizing animals in rural/wilderness communities more frequently reported *always, most of the time, and about half the time* than did their colleagues in urban communities. Mixed species veterinarians euthanizing animals in urban and suburban communities more frequently reported *sometimes* and *never* than did their colleagues in rural/wilderness communities. Mixed species veterinarians euthanizing animals in urban communities also more frequently reported *sometimes* and *never* than did their colleagues in suburban communities.