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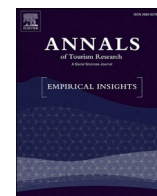
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## Canine cognitive dysfunction syndrome and pet tourism

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### 1. Introduction

Rapid societal aging carries enormous consequences and has attracted widespread attention. Tourism's potential role in healthy aging is one such focus as scholars seek to increase older populations' quality of life. Human–animal interaction (e.g., between pet owners and their pets) has been shown to positively influence aging populations: pets can help older people enjoy life and feel loved. However, pets age faster than humans; some species (e.g., dogs and cats) are considered seniors as early as age 6. Pets can even develop medical problems seen in aging humans, albeit sooner. Pet owners bond strongly with their pets. Researchers (e.g., Lass-Hennemann, Schäfer, & Sopp, 2022) have examined owners' emotional attachment to dogs, namely these pets' effects on humans' mental health. Tourism studies have addressed people's decisions to have pets as travel companions. Doing so can benefit humans, yet the advantages for pets—especially aging ones—are unknown. Dogs are one of the most popular pets worldwide and age relatively quickly. This paper innovatively describes potential benefits for dogs who travel with their owners. Canine cognitive dysfunction syndrome, a disease of aging in dogs, is referenced to introduce this topic into domains such as tourism, veterinary science, and animal behavior.

### 2. Canine cognitive dysfunction syndrome

Canine cognitive dysfunction syndrome is a progressive neurodegenerative disorder characterized by cognitive decline. The condition

can compromise dogs' memory, orientation, and adaptability. It produces behavioral and neuropathological changes similar to those seen in Alzheimer's disease (Howe, 2022). Canine cognitive dysfunction syndrome is thus often called “canine dementia.” The disease arises from a complex interplay among age-related, genetic, and environmental factors, with age being prominent. Canine cognitive dysfunction syndrome often emerges around age 11. Early onset is increasingly prevalent, with some cases occurring in dogs as young as ages 6–8. Canine cognitive dysfunction syndrome is a major health problem in aging dogs: rates vary from 14% to 35%, and the risk rises exponentially with age. More than 68% of dogs older than 15 show at least one clinical sign of canine cognitive dysfunction syndrome (Dewey, Davies, Xie, & Wakshlag, 2019). Analogous to human aging, the senior canine population is growing, largely thanks to attentive owner care. Age-related diseases such as canine cognitive dysfunction syndrome can nonetheless shorten dogs' healthspan (Vikartovska et al., 2021).

Canine cognitive dysfunction syndrome is grossly underdiagnosed. Diagnosis is primarily based on owner- or veterinarian-reported symptoms. Canine cognitive dysfunction syndrome currently has no cure. Available treatments, including pharmacological and non-pharmacological approaches, focus on preventing cognitive decline (Dewey et al., 2019). Pharmacological interventions usually take the form of medication or dietary supplements. These substances can alleviate canine cognitive dysfunction syndrome symptoms but cannot halt cognitive dysfunction. Many drugs also come with notable side effects, including diarrhea, restlessness, hyperactivity, and loss of appetite

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(Prpar Mihevc & Majdič, 2019). Nonpharmacological interventions, such as behavioral therapy (e.g., play training), are favored for their affordability and absence of discernible side effects. More innovative methods are needed to improve quality of life for dogs with canine cognitive dysfunction syndrome (Vikartovska et al., 2021).

### 3. Travel therapy for canine cognitive dysfunction syndrome

As close friends of humans, dogs assume pivotal roles in health and medical settings. They are widely used in pet therapy to ease psychological concerns and as a research model to understand disease pathogenesis. Animal welfare encompasses facets such as nutrition, the environment, physical health, and behavior. It should therefore be protected to foster sustainable societal development (Broom, 1991). Tourism could play a key role in this regard, as it represents a promising intervention for dementia in people (Wen, Zheng, Hou, Phau, & Wang, 2022). Canine cognitive dysfunction syndrome has comparable behavioral and neuropsychiatric symptoms, making it ideal for investigating dementia treatment. Tourism may thus contribute to the well-being of dogs with canine cognitive dysfunction syndrome.

Taking dogs on trips provides novel stimuli (e.g., new sights and smells) to keep dogs' brains active. These experiences can boost dogs' perception and cognition, even slowing cognitive deterioration tied to canine cognitive dysfunction syndrome (Prpar Mihevc & Majdič, 2019). Tourism typically involves outdoor activities (e.g., walking, hiking). Physical exercise can improve the blood circulation and metabolism of dogs with canine cognitive dysfunction syndrome, enhancing their physical fitness and cognitive function (Dewey et al., 2019). Tourism also offers dogs with canine cognitive dysfunction syndrome diverse environments in which to encounter other people and animals. Positive interactions can enrich dogs' sensory experiences while promoting their social adaptation and cognitive flexibility. These interactions can further solidify dogs' emotional well-being (Vikartovska et al., 2021). Destinations tend to offer various cuisines as well. Exposing dogs with canine cognitive dysfunction syndrome to healthy dietary choices, such as fish and blueberries, can introduce brain-boosting nutrients. These foods may lessen free radical-induced nerve damage and slow disease progression (Dewey et al., 2019).

### 4. Concluding remarks

This viewpoint article calls for greater attention to tourism's potential roles in pets' healthy aging. Possible implications exist for key tourism stakeholders (e.g., pets and their owners, academics, policymakers, practitioners). Medical interventions for canine cognitive dysfunction syndrome via pet tourism could benefit dogs as well as pet owners' mental health. Animal welfare advocates can be profiled through a tourism lens as well. Academically, canine cognitive dysfunction syndrome represents an emerging stream in the tourism literature. More interdisciplinary discussions across various fields (e.g., tourism, veterinary science, marketing, health science) are essential to explore this research area for people and animals. Policymakers should develop inclusive regulations (e.g., permitting pets in public spaces) to promote pet-friendly tourism.

Practically, pet tourism offers advantages for both pet owners and the animals themselves, especially vulnerable pets with health conditions. Dogs with canine cognitive dysfunction syndrome represent a niche market with promising business opportunities. For the travel industry, better accommodating these guests will yield economic benefits and foster social responsibility. Accessible tourism advances the United Nations' sustainable development goals to promote tourism to all. This concept could extend to animals that stand to benefit from travel. Pet tourism might open an avenue to further promote accessible tourism and revitalize the global tourism industry. Practitioners could develop

accessible tourism by cultivating pet-friendly destinations (e.g., for dogs with canine cognitive dysfunction syndrome). Companies could offer specialized services and attentive care throughout trips. Pet owners should be given pre-trip resources on travel preparation, including pet-friendly accommodations, local pet medical services, veterinary advice, and packing lists. During trips, pet owners should have access to tailored facilities (e.g., pet-accommodating guest rooms, pet supplies, secure pet areas) and activities (e.g., pet social gatherings, walks, games). Companies should also train their staff to understand the behavior and needs of dogs with canine cognitive dysfunction syndrome so employees can interact effectively with these animals and provide supplementary care. Personalized services can include special dietary options, medication management, pet spas, and so on. Health and safety measures, such as emergency veterinary services and anti-lost pet programs, will be indispensable. After trips, practitioners should request pet owners' feedback to continue enhancing services. Companies can even provide ongoing support, including guidance on pet health, socialization, and future travel. This pet-friendly ecosystem could ensure pet owners' worry-free travel and improve the quality of life of dogs with canine cognitive dysfunction syndrome.

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### Declaration of Competing Interest

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