

Alzheimer's Disease In The Era Of Climate Change: Could Carbon Reduction Strategies Become A Public Health Tool For Dementia Prevention?

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Background

Alzheimer's disease is increasingly recognized as a **multifactorial disorder** influenced by both **biological** and **environmental factors**.

Growing evidence suggests that **air pollution, extreme heat, urban noise, and limited access to green spaces** may contribute to cognitive decline through pathways involving **neuroinflammation, oxidative stress, and vascular dysfunction**.

As **climate change intensifies these exposures**, understanding their implications for **brain health** becomes increasingly important.

Methods

A **narrative conceptual review** was conducted to examine **relationships among environmental exposures, climate-related factors, and dementia risk**.

Evidence was synthesized from **epidemiological, experimental, mechanistic, and public health literature** addressing air pollution, heat stress, urban environmental factors, cardiometabolic health, and neurodegenerative pathways.

Findings were **integrated into a conceptual framework linking carbon reduction strategies with potential mechanisms** relevant to Alzheimer's disease prevention.

Key messages

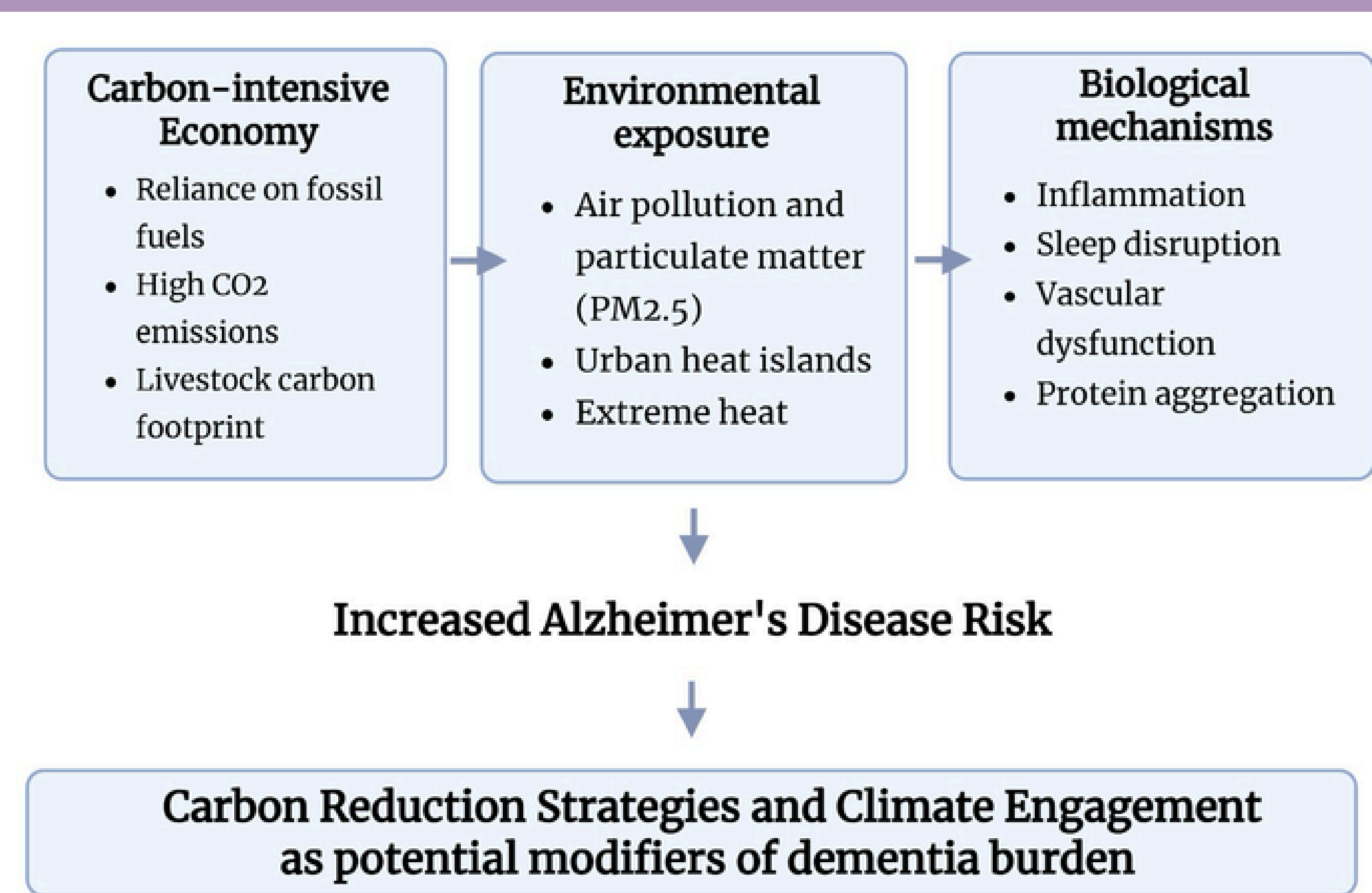


Figure 1. Conceptual pathways linking carbon-intensive development, environmental exposures, biological mechanisms, and dementia risk.

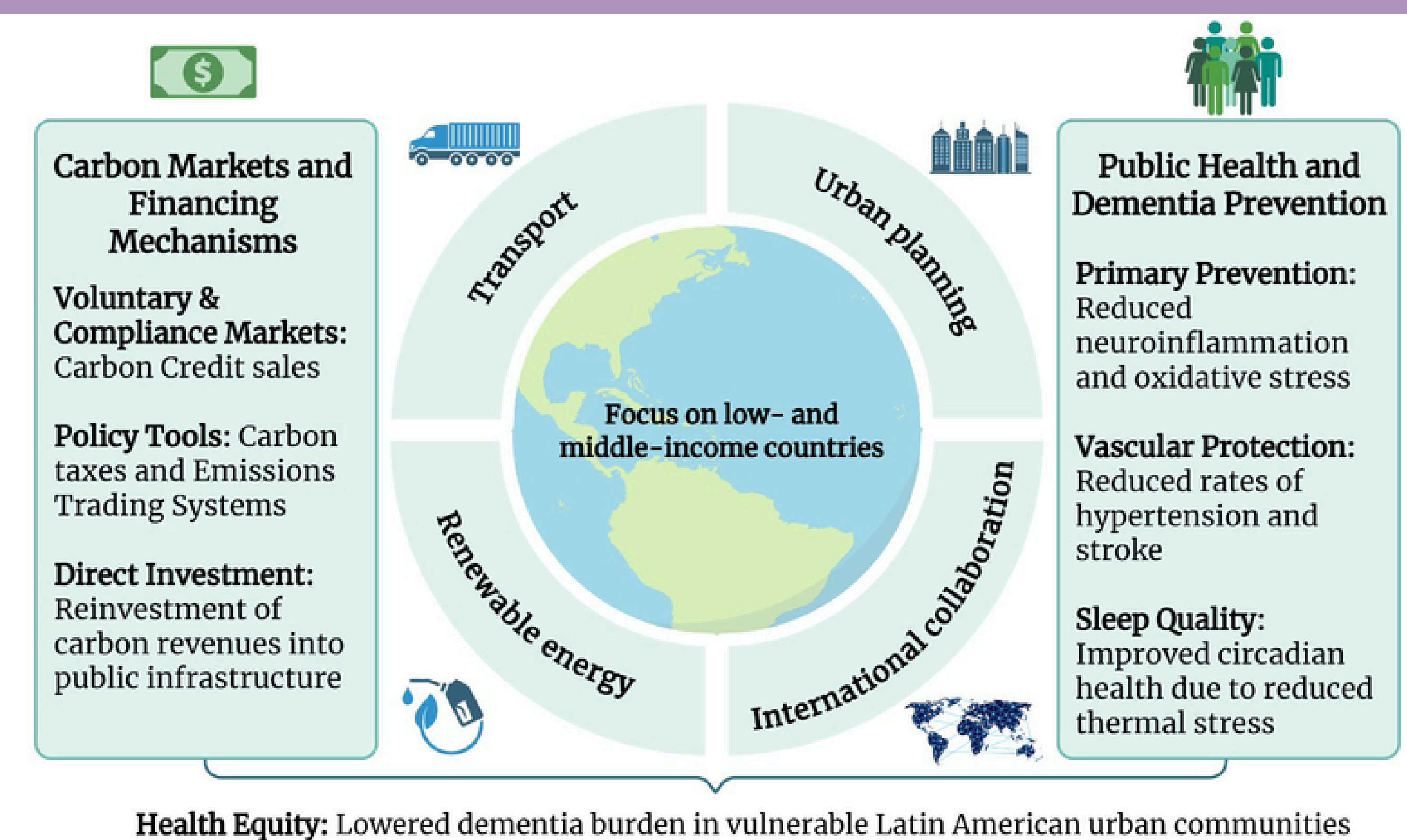


Figure 1. Policy translation linking climate mitigation strategies to brain health and dementia prevention.

Although **direct evidence linking carbon reduction programs to dementia outcomes is currently limited**, existing mechanistic and epidemiological data suggest that **climate mitigation strategies may provide important co-benefits for brain health and dementia prevention**.

Conclusions

- **Environmental exposures** are increasingly recognized as **modifiable contributors to dementia risk**;
- **Carbon reduction initiatives** may reduce exposures linked to **neuroinflammation, vascular dysfunction, and metabolic stress**;
- **Integrating climate policy and public health strategies** could support long-term **reductions** in the **global burden** of Alzheimer's disease.

References

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