Developing and Analyzing a Literature Library on Traffic Emissions, Air Pollution, Exposures and Health

**Objectives**
- Develop and analyze the Center for Advancing Research in Transportation Emissions, Energy, and Health (CARTEEH) literature library available at: [https://www.carthe.org/carthe-literature-library/](https://www.carthe.org/carthe-literature-library/)
- Provide a wide range of users with an open-access tool for researching and collecting information related to full-chain elements, in addition to technologies
- Identify where the literature is clustered and where it is missing, identify research and knowledge gaps, and guide the composition of similar libraries and design of future studies
- Encourage utilization of the library and emphasize the importance of the full-chain in research
- Identify recommendations and address limitations

**Methods**

The development of the literature library was undertaken in three steps:

1. **Literature collection**
   - Expert knowledge of relevant literature
   - Article recommendations from email list subscriptions
   - Ongoing non-systematic literature search
   - Studies prior to the year 2000 were excluded.

2. **Literature organization**
   - Each study was inputted into a Microsoft Excel sheet. This sheet includes information on each article's citation, URL link, publication year and type, addressed literature topic, and study type.
   - Literature Topic and Study Type categorization is not mutually exclusive; that is, a publication may include one or more topics and types of methods/analyses.

3. **Literature analysis**
   - Using the filter function and count feature embedded in Microsoft Excel, all 865 studies were analyzed to:
     - Determine the amount and patterns of motorized vehicle usage at a certain time/place.
     - Exposure, health impacts, and/or technology.
     - Study types in descending order: Practice/Policy (53.6%), Measurement (49.4%), Modeling (47.5%), and Review (22.2%).
     - The amount of pollutants emitted from motorized vehicles, whether directly from the exhaust or non-exhaust emissions.

**Results**

**Literature Library and Library Tools**
- 865 studies are currently included in the literature library
- Ongoing addition of studies
- Online library search tool filters studies for users
- Excel sheet can be downloaded or filtered and partially exported as CSV file

**Distribution**
- Addressed literature topics in descending order: Air quality (64.5%), Exposure (56.6%), Health impact (44.9%), Emissions (29.5%), Traffic (28.0%), and Technologies (8.7%)
- Lack of studies addressing all full-chain elements—merely 2.9%
- Study types in descending order: Practice/Policy (53.6%), Measurement (49.4%), Modeling (47.5%), and Review (22.2%)
- Types of papers in descending order: Journals (61.3%), Reports (31.2%), Conference papers (1.7%), Theses (1.0%), and Books (0.2%)
- Most library studies were published between 2012-2018

**Strengths and Limitations**

**Strengths**
- Library is continuously growing and contains recent literature
- Independent researchers collaborated for topic and study type categorization
- Non-systematic literature search
- Subjective literature categorization

**Limitations**
- Library usage assessment
- Conduct more studies using a full-chain elements
- Include more grey literature
- Suggestion box

**Highlights**
- Developed an open-access literature library and online search tool
- Found a lack of studies implementing the full-chain assessment
- Encouraged assessment of the full-chain in research to influence policy change

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**References**