



# **A Better Commute to School: Exploring Bike Bus Programs in the United States**

**Literature Review**

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# Literature Review

## **A Better Commute to School: Exploring Bike Bus Programs in the United States**

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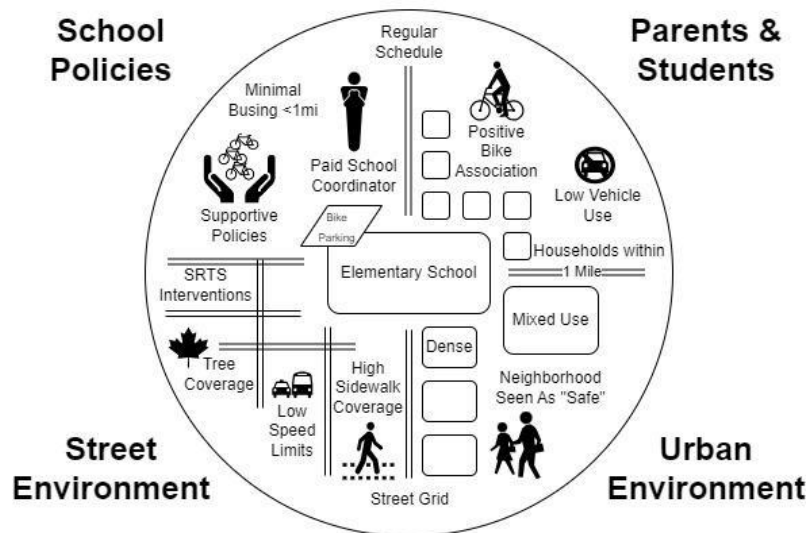
## Background

**Bike Buses** are a relatively new form of **Active Transportation to School (ATS)** that have emerged in Europe and the United States in the past three years. ATS was widespread in the US through the 1960s, particularly for students who lived within one mile of their school. In 1969, 89% of students within one mile of their school biked or walked to school. By 2009, this number had dropped to 35% (Jacob et al. 2021).



Source: Jonathan Maus/BikePortland

Initiatives encouraging group biking to school for students date back to 1998 in Europe, with “bike trains” appearing in Portland, Oregon in the early 2010s. In 2019, *Bici Buses* became popular in Barcelona, Spain and sparked worldwide interest through videos posted to social media platforms like TikTok. A recent global survey **found over 470 active bike buses worldwide** (Simón-i-Mas et al. 2024).



Generally, a bike bus consists of one or more adult supervisors, often parents, who guide a group of students along a defined ‘route’ to one or more schools. Most bike buses run once a week, with only 10% operating daily (Simón-i-Mas et al. 2024). Published information on bike buses is limited but growing due to their recent development.

The four thematic areas of influence are **school policies**, **parent and student attitudes and behaviors**, the **urban environment**, and the **street environment**.

## School Policies

School policies are instrumental in determining levels of ATS, including bike buses. Schools with **explicit, supportive ATS policies** see higher levels of ATS than those with no policies or prohibitive policies (McDonald et al. 2013, McDonald et al. 2015, Nikitas et al. 2019, Stewert et al. 2012). In particular, having **multiple supportive policies** has greater impact than a single policy (Ganzar et al, 2023, McDonald et al. 2013, McDonald et al. 2015).

**Remuneration** for ATS leaders and coordinators, particularly for bike buses, is indicated as key for the longevity of programs. **Reliance on volunteers** reduces the success of ATS initiatives (Nikitas et al. 2019,) and ATS should be managed by schools, not parents, to reduce the time cost for parents and increase its convenience for them (Lucken et al. 2018).

## Parent and Student Attitudes and Behaviors

Many reviews of ATS and SRTS interventions identify parental and student attitudes to have strong correlations with behavior, and often cite parental attitudes as having a greater impact on ATS adoption than the built environment. Key parental attitudes for ATS adoption include higher perceptions of **social control** (McDonald et al. 2010,) positive impressions of the **social outcomes** of ATS (King, Klezczewska et al. 2020, Nikitas et al. 2019,) and perception of **safety in numbers** when children travel in groups (Kang & Diao 2022, Klezczewska et al. 2020).



Source: Montclair Local

For students, there is ample literature describing the health and academic benefits of ATS. Participation in physical activity, especially aerobic exercise, is linked with **improved health** (Klezczewska et al. 2020,) **executive function, focus, working memory and ADHD symptoms** (Bidzan-Bluma & Lipowska 2018, Mehren et al. 2020,) **mental health** (Klezczewska et al. 2020, McDonald et al. 2015,) and **increased energy** (Alder 2022). **Academic improvement** is associated with ATS, notably in girls (Bidzan-Bluma & Lipowska 2018, McDonald et al. 2015).

## Urban Environment

The urban environment, which includes the scale, density and shape of neighborhoods in and around schools and between home and school, plays a role in ATS, though the literature implies it is less impactful than the other thematic areas. The one exception is the **distance to school**, which routinely is cited as the primary reason for failure to adopt ATS (Jacob et al. 2021, Kweon et al. 2023, Lu et al. 2014, Ross et al. 2020, Stewert et al. 2012). Households that live closer to

schools have higher rates of ATS (Kweon et al. 2023, McDonald et al. 2010, Nikitas et al. 2019, Stewert et al. 2012, Zhou et al. 2010).

**Parental safety concerns** associated with crime are significant barriers to ATS (Jacob et al. 2021, Kang & Diao 2022, Kweon et al. 2023, Lu et al. 2014, Nikitas et al. 2019, Stewert et al. 2012, Zhou et al. 2010) and **focusing on neighborhood safety** can have a positive equity impact (Jacob et al. 2021, Lucken et al. 2018, Stewert et al. 2012,) and a positive impact on girls' participation in ATS (McDonald et al. 2010). Bike Buses in particular can act as a **safety intervention** through visibility and numbers (O'Keefe 2019, So 2023).

## Street Environment

The street environment, which includes the design and use of roads, bike and pedestrian infrastructure, intersection density and placement, and landscaping, has been the primary focus of SRTS interventions and, like the urban environment, contains characteristics that may support or hinder ATS adoption. **Parental safety concerns** associated with traffic are significant barriers to ATS (Jacob et al. 2021, Kweon et al. 2023, Lu et al. 2014, Nikitas et al. 2019, O'Keefe 2019, Stewert et al. 2012, Zhou et al. 2010,) and children echo safety concerns associated with traffic are barriers to ATS (Kweon et al. 2023, Lu et al. 2014).



Source: Montclair Local

Bike and pedestrian infrastructure, particularly **sidewalks and bike lanes** increase ATS (Lucken et al. 2018, McDonald et al. 2010) and their absence decreases ATS (Ferenchak & Marshall 2019, Kweon et al. 2023, Stewert et al. 2012). Presence of **trees** along ATS routes was associated with higher participation (Stewert et al. 2012) and improved perceptions of both traffic and neighborhood safety (Kweon et al. 2023).

## Conclusion

Bike buses have **the potential to leverage the last twenty years of SRTS interventions**, ensuring that the miles of bike lanes, sidewalks and crosswalks funded by districts, communities, states and the federal government have their full value realized. Persistently low ATS adoption, in spite of these investments, indicates that simply building a bike lane is insufficient to shift modes for many parents and students. Bike buses, as a new way of navigating those interventions, **have enormous potential** and deserve further attention and research.



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