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Tale of Two Ecosuburbs in Freiburg, Germany

Encouraging Transit and Bicycle Use by Restricting Parking Provision

Andrea Broaddus

This paper compares two ecosuburbs of Freiburg, Germany, created over the past 10 years and similar in many respects except for provision of parking. Both are transit-oriented developments designed as family-friendly live–work–play places, composed of mixed-use commercial and residential buildings meeting ecological best practices. Both suburbs have similar high density, are located about 3 km from the city center, and have excellent transit and bicycling connections. Rieselfeld followed the German convention of one parking spot per residence, while Vauban was designed by environmentalist citizen–activists to support car-free living. Parking cost and location were unbundled from housing, with parking spots provided at construction cost in garages on the periphery of the Vauban district. Demand was strong for this pedestrian- and bicycle-oriented housing, and residents used these modes at a higher rate. Fewer households in Vauban owned cars, and car-owning households were observed to drive less often. Travel behavior data showed that residents of Rieselfeld had higher rates of transit use in an otherwise typical modal split, while Vauban's residents had an extremely low share of cars and a high share of bicycles. These differences were attributed in part to Vauban's more restrictive parking policies.

America's suburbs are populated with young families seeking neighborhoods with low-traffic streets and natural areas for children to play, but this combination is often available only in residential areas with constrained travel options. Close-in suburbs may have suitable parks and provide better access to retail and transportation alternatives, but have undesirable traffic volumes. Suburbs far away from the city center may offer quieter streets and better access to nature, but require more car use. Households seeking to reduce fuel consumption for environmental or budgetary reasons may be unable to find the housing they seek.

Levine (*1*) and Boarnet and Crane (*2*) point to zoning and other policies guiding land development that lead to an undersupply of pedestrian- and transit-oriented neighborhoods, while Shoup suggests that relaxation of minimum parking requirements would improve housing affordability and reduce car use (*3*). Deakin includes a greater range of housing choices, including higher-density inner suburbs, among sustainable transportation strategies in practice in Europe (*4*), and Scheurer documents experimentation with car-free housing developments there (*5*). However it is difficult to find direct evidence of the supposed latent demand for car-free housing, or evidence that more pedestrian and transit-oriented development actually leads to reduced car use (*6, 7*).

This paper describes a German reinvention of the suburb as a high-density, mixed-use place where cars are hardly used and children and low-consumption lifestyles can flourish. Implemented on a large scale, these "ecosuburbs" offer empirical evidence of demand for pedestrian-, bicycle- and transit-oriented housing, and reduced car use by the residents who choose them.

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METHODOLOGY

First, Freiburg's ecosuburb concept is described, followed by more detailed descriptions of two ecosuburbs that have been built, Rieselfeld and Vauban, and their transportation supplies. The most notable difference between the two ecosuburbs is that Vauban actively discourages car use through restrictive parking policies, making for a natural experiment in how such policies can contribute to travel behavior.

The paper then compares car ownership and car, bicycle, and transit use by residents of Rieselfeld and Vauban, using mode share data from local and national mobility surveys. The impact of Vauban's parking policies is explored further using data from an in-depth household travel survey of Vauban residents. The paper considers factors contributing to travel behavior, including cost, travel time, neighborhood design, availability of mode choices, and self-selection bias. Household income may be a contributing factor, but these data were not available at the neighborhood level.

FREIBURG'S ECOSUBURB CONCEPT

Located in the sunny southwestern corner of the country, the city of Freiburg was the cradle of Germany's environmental movement in the 1960s. It has led environmental policy making ever since, with the strongest energy efficiency, water conservation, and sustainable transportation measures in the nation; the Green Party attracts about 25% of the vote in city elections (*8*). Freiburg is headquarters to the German solar industry and an ecological business innovation center, with environmental design, research, and manufacturing forming the largest employment sector; per capita gross domestic product is €37,300 (€1 = $1.30), about 30% higher than the national average (*9*). It is a university town with a young population; 70%

of the roughly 200,000 inhabitants are between 18 and 45 years of age (*8*).

Freiburg is famous for its sustainable transportation system. The city adopted a transit-focused transportation plan in the 1970s that has helped keep the city compact and pedestrian-oriented. Policies such as removing car traffic from the city center, building a 160-km network of signed bike routes, and expanding the tram system have been faithfully maintained for 30 years (*10*). As a result, Freiburg resisted the trend of rising car use that most German cities have experienced. Its modal share for cars is 31%, compared with 57% in Germany overall (*11*).

The concept of an ecosuburb emerged in the 1990s from the combination of Freiburg's green transport politics and a particular development opportunity. In the midst of strong economic growth and demand for new housing, the city decided to make a 790-acre (320-ha), city-owned parcel available for development. Known as Rieselfeld, it was an open field that served as the city's wastewater leach area for more than 100 years. Undisturbed and saturated with nutrients, the area was especially rich in rare flora and fauna, so the city designated most of Rieselfeld as a nature preserve, leaving 193 acres (78 ha) for new housing. Freiburg's leadership decided to build the new city district as a showcase of sustainable development, putting ecological principles into practice, and as a response to demand for environmentally friendly, affordable, and child-friendly neighborhoods. The ecosuburb was envisioned as a live–work–play district, with retail and small office spaces.

Freiburg city planners worked with local environmental sustainability experts, including architects, solar technologists, landscape architects, and transportation planners, to create a set of planning guidelines defining the new ecosuburb concept. They applied ecological best practices for building design, operations, and construction materials to exceed the city's high energy-efficiency standards. Recognizing that the low power and heating costs of ecologically designed housing makes it more affordable, planners included a mix of housing ownership and rental options at a range of income levels. For transportation, ecosuburbs were to be transit-oriented developments providing excellent transit, bicycle, and pedestrian access. Access for cars would be limited, with traffic calming and low speed limits [20 mph (30 km/h)] throughout, and the parking ratio was set to one spot per housing unit, mainly in underground garages.

Some defining characteristics of the ecosuburb concept are as follows (*12*):

- Mix of uses and high residential density. Attached residential buildings up to five stories with first-floor retail [floor area ratio (FAR)>1]; no single-family detached housing.
- Jobs on site. Integration of office and retail space along transit-served arterial streets, and light industrial land uses on the development periphery. Housing includes live–work units.
- Alternative transportation. Transit-oriented development with frequent rail and bus service, high-quality walking and bicycling paths, convenient bicycle parking, carsharing, traffic calming, and speed limits of 20 mph (30 km/h) on all streets.
- Energy efficiency. Low energy standard of 65 kW-h/m^2 per year, met by building multistory attached buildings with passive solar design and district heating systems.
- Water conservation. Rainwater collection and use indoors, green roofs, pervious pavements, unpaved tramways, and drainage sloughs.
- Social infrastructure. Community associations, libraries, churches, and other meeting centers, shared courtyards and play areas, community gardens.
- Range of financing and housing forms. Mixture of subsidized and privately financed housing, ranging from investor-owned rental apartments to multifamily building cooperatives to single-family townhomes (10% of total).

Once the ecosuburb guidelines had been defined, Freiburg held a design competition to solicit master plans for Rieselfeld. In 1993, the winning master plan was adopted, and the city began marketing the real estate—with great success. In 2009, the city reported that "demand continues to be excellent," and that complete build-out is expected within the next few years (*12*). The Rieselfeld district is expected to have 4,200 residential units, 10,000 to 11,000 inhabitants, and 1,000 jobs when completed.

While Rieselfeld was getting under way, an unexpected chance arose for Freiburg to create a second ecosuburb. A French military base located on Freiburg's outskirts was transferred to city ownership in 1992 after the end of the Cold War made it obsolete. The 84-acre (34-ha) Vauban base included several handsome barracks and a magnificent boulevard of linden trees. Figure 1 shows the location of Rieselfeld and Vauban in relation to Freiburg's historic center, and how they are situated on the city's tram system.

Freiburg decided to redevelop the Vauban base for housing, envisioning a new ecosuburb city district similar to Rieselfeld. However, a group of environmental activists intervened at the early stages of the project to shape it in a different way. This group, called Forum Vauban, worked together with anarchist squatters who occupied the vacant military barracks to push the city to adopt further-reaching environmental and social goals for Vauban.

Forum Vauban contended that the ecosuburb model did not go far enough to promote transit and bicycle use and reduce car use. The group believed that Rieselfeld's transportation plan didn't meet the needs of families seeking to reduce vehicle ownership and fuel consumption. Aiming to create a neighborhood that encouraged a low-driving lifestyle and provided an affordable option for young families willing to forgo car ownership, they developed a new mobility concept and street typology for Vauban (*13, 14;* Mattias Lubke, unpublished data). Less land dedicated to parking would boost residential density and support transit.

The transportation element of the ecosuburb concept was redefined by Forum Vauban (*14*):

- Unbundled parking. Car-related costs should be transparent to residents, and parking spots should be provided only to those willing to pay garage construction costs. Cars should be stored in parking garages on the edge of the development.
- Driving—the least convenient option. Residents should have access to their bike within a 2-min walk from their front door, access to transit within a 5-min walk, and access to their car within a 10-min walk.
- Bicycling—the most convenient option. Sheltered bicycle parking must be provided directly in front of the entrance to every residential building.
- Greater accessibility with bicycling and walking than driving. There are only two access points at which cars may enter the Vauban district, and they have very limited circulation within it, at a speed limit of 20 mph (30 km/h). A network of off-street foot and bicycle paths provides access to every destination within the Vauban district and a direct route to the city center.
- Limited-access residential streets. A new "play street" typology was developed for housing to front. The streets are narrow and intended for loading purposes only, not circulation, and are usually in

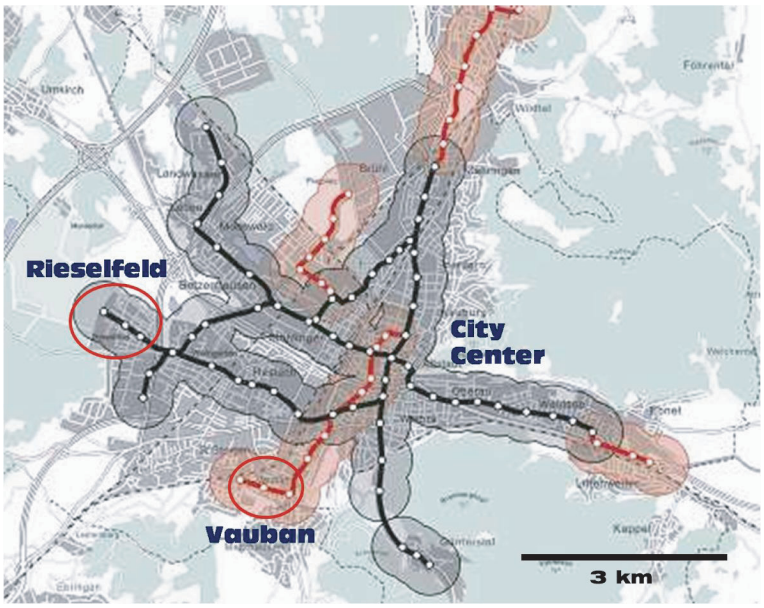


FIGURE 1 Tram network map showing ecosuburbs in relation to Freiburg city center. (Source: Steve Melia, University of the West of England, Bristol, with labels and scale added by author.)

a horseshoe shape off a circulator street. The speed limit is walking speed [3 mph (5 km/h)], and no parking is allowed.

When the city held a design competition for redevelopment of the Vauban base, Forum Vauban submitted a car-free housing master plan that included a power-generating solar village, student cooperatives, and family housing without parking. The city was resistant to this grassroots planning effort, convinced that its model was more marketable. The long-term feasibility of reduced parking provision drew particular skepticism, and city planners were unwilling to diverge from the parking standard of one spot per residential unit, as set in German national law, to set a lower parking requirement. A power struggle ensued between the city's political leadership and Forum Vauban that was eventually resolved by a compromise that allowed the city to bank land for a future parking garage, should Vauban residents become more interested in car ownership over the long term.

When the car-free plan was finally agreed on and announced to the public, a waiting list of families interested in moving to Vauban quickly developed. However, finding financing for such nontraditional housing was a barrier. Forum Vauban was contracted by the city to coordinate families wishing to form building cooperatives and other aspects of the planning process; they later became the residents' association. The first two housing phases were largely self-financed by families who formed private building cooperatives. The city was able to attract investors to develop the final two phases, but even though the car-free lifestyle proved marketable, investors remained conservative, and the remainder of Vauban was developed with the conventional (1:1) parking provision. Because of the high energy-efficiency standards, development costs in Vauban are well above the regional average of €330/m^2, at €440/m^2 (*15*).

Construction on Vauban's master plan began in 1998, and the last plots are in development today. Vauban is expected to have approximately 2,000 residences with 5,000 residents and 600 jobs on completion (*15*).

COMPARISON OF TRANSPORTATION SUPPLY IN RIESELFELD AND VAUBAN

Transportation supply and the orientation of streets, buildings, transit and community spaces are shown for Rieselfeld in Figure 2 and Vauban in Figure 3.

Traffic Calming

Children's safety and mobility are a top concern in both ecosuburbs, which have much higher proportions of family households than most other suburbs throughout Germany. As shown in Table 1, both of Freiburg's ecosuburbs are distinctly denser and have younger populations than the rest of the city, such that children comprise about one-third of residents. The child-friendly design, with extensive shared green spaces and low- or no-traffic areas between buildings, which reduce exposure to cars and provide ample cycling and playing areas, have proven a major draw. Families are also attracted to the large protected natural areas on the edges of these districts.

Both districts are designed to prevent cut-through traffic, with just two entrances for cars from peripheral arterial streets. In Rieselfeld, only the tram and bicycles have access by the most direct route, the gateway entrance. Rieselfeld's streets are mainly in a grid, aside from one greenway replacing a local street. Vauban's street layout allows little car circulation, and there are three street-replacing greenways. Forum Vauban developed a new residential play street typology that limits car traffic in front of homes through their horseshoe-shaped design (visible in Figure 3). Parking is allowed only for short-term loading on play streets, and the speed limit is 3 mph (5 km/h).



FIGURE 2 Map of Rieselfeld district (*11*).

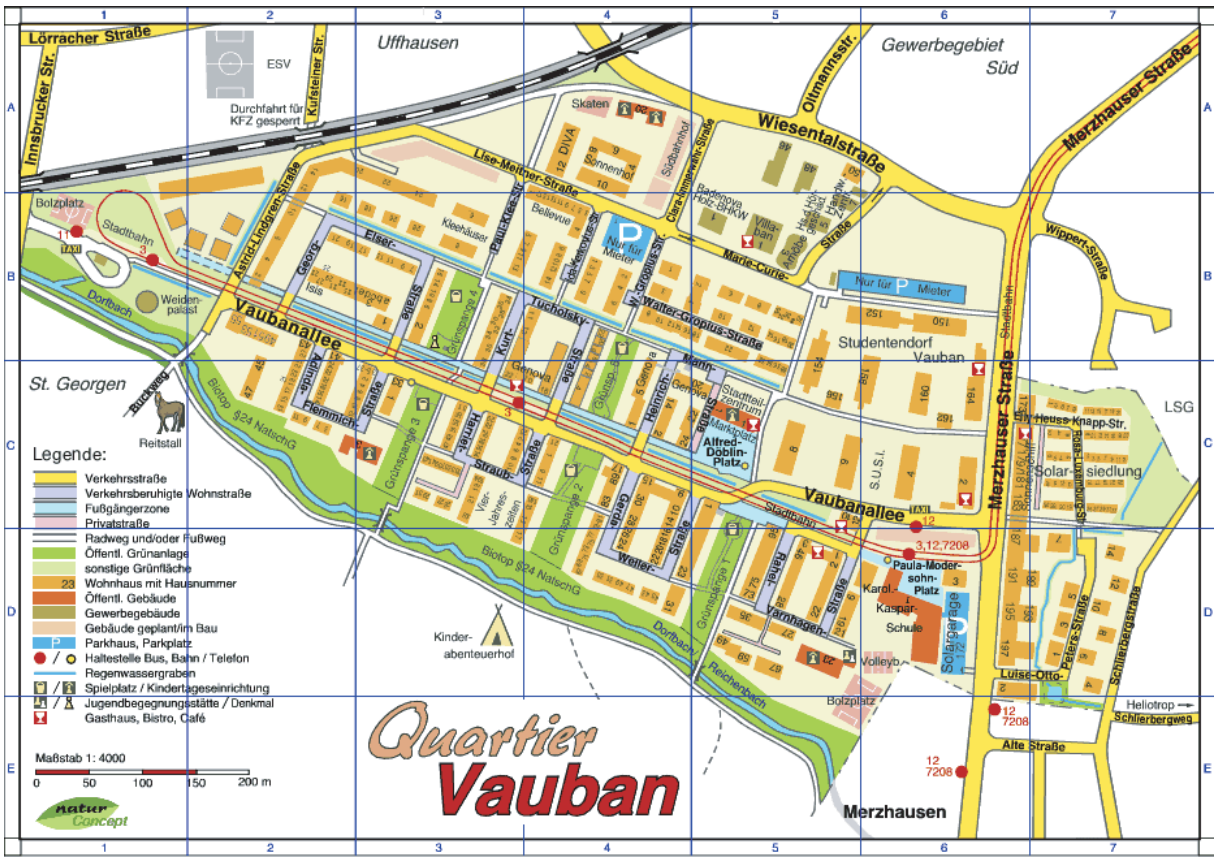


FIGURE 3 Map of Vauban district (*16*).

TABLE 1 Residential Density and Demographics, 2009 (*8*, *17*)

	Residential Density (residents/acre)	Residents	Residents Under Age 18 (%)	Residents Ages 18–60 (%)	Residents over Age 60 (%)	Households	Households with Children (%)
Total Freiburg	19	210,465	16	64	21	113,641	17
Rieselfeld district	38	8,871	32	61	7	3,319	48
Vauban district	50	5,106	28	68	3	2,174	38

Transit Orientation

Rieselfeld and Vauban are both transit-oriented developments, with a transit corridor as the main street. In both, there are three tram stops along a central corridor approximately 1-km long, with the tram line terminating at the end. Nearly every residence is within one-third of a mile (.5 km) of a tram stop. Both districts have similar transit provision, with frequent bus and tram service (10- to 15-min headways). It is about a 10- to 15-min ride to the city center from either suburb. Streets are designed to facilitate an easy walk to transit from anywhere in the district.

In the Vauban district, transit service was promoted via a mobility benefit package developed by Forum Vauban. Residents were offered an all-in-one package of a carsharing membership, annual transit pass, and discount pass for regional and long-distance trains. This offer had a high acceptance rate, especially among car-free households (59%) (*17*).

Bicycle Orientation

Both Rieselfeld and Vauban could also be called bicycle-oriented developments. They have excellent bicycle networks, with high-quality on-street bike lanes, off-street pathways, marked street crossings, and plentiful covered bike parking. Both districts are well connected to Freiburg's network of bikeways, such that cyclists can make the 3-km trip to the city center along bike paths separated from car traffic.

Vauban has further prioritized bicycling with more off-street bike paths and more plentiful and convenient bike parking than Rieselfeld (see Figure 4). Forum Vauban sought to encourage bicycle use by making bicycling the most convenient mode for residents. The aim was for bicycling to be available within a 2-min walk, transit within a 5-min walk, and the car within a 10-min walk. To achieve this time savings, the group required that a covered bike shed be built in front of the entrance to every residential building.

Parking Provision

The main difference between Rieselfeld and Vauban is the provision of parking for cars. On-street parking is very limited and metered in Vauban. Rieselfeld's street grid provides more on-street parking, and, aside from meters on the main commercial street, it is free.

German federal law has required at least one off-street spot per residential unit since 1939. In both districts, most of the parking is located in underground garages, as shown in Figure 5. Rieselfeld's residents pay for their garage spots through their housing costs. Forum Vauban had to fight Freiburg leadership to realize the group's vision of car-free living. City leaders believed it would be too difficult to gain exemption from the parking law, and also that future Vauban residents might prefer to have cars. A creative solution was negotiated that banks land for future parking needs. First, parking rules were relaxed such that parking spots could be provided in two garage structures located on the periphery of the Vauban district, rather than on the residential property. Second, parking costs were unbundled from housing, allowing the garage structures to be financed and sold separately. Garage spots were sold to interested households for the construction cost of approximately €17,000 per spot (*14*).

Car-free households in Vauban are required to buy a parking spot, but they are relieved of the construction cost. Because they do not



FIGURE 4 Bicycle shed parking and residential street in Vauban (photo by author).



FIGURE 5 Underground car parking and bicycle–pedestrian path in Rieselfeld (photo by author).

TABLE 2 Car Ownership and Parking Provision, 2008 (*8*, *14*, *17*)

District	Personal Vehicles	Personal Vehicles (per 1,000 people)	Residential Parking Spots (estimated)	Registered Car-Free Households
Total Freiburg	81,979	408	N/A	None
Rieselfeld district	2,408	292	3,300	None
Vauban district	809	169	1,200	422

actually have a car, the parking spot is nonexistent. A plot of land on the edge of the district was set aside as the site of a potential future parking garage. Car-free households pay only €3,700, which is the land value of an unbuilt parking spot (*14*). These households must register annually with a declaration that they do not own a car or use one on a regular basis. This group of residents is called the Car Free Society of Vauban and numbers about 420 households (*14*). The site of the would-be parking garage is a green space used for community barbecues and soccer games.

Table 2 shows that residential parking is oversupplied in both districts. Car ownership data reveal that although a parking spot is supplied with every one of the 3,300+ residences in Rieselfeld, only about 2,400 personal vehicles are registered. Even accounting for a few more registered as work vehicles, there are far more residential parking spots than cars. The oversupply is a bit tighter in parking-restricted Vauban. There, about 800 personal vehicles registered by residents are accommodated by an estimated 1,200 parking spots.

Car Ownership

Car ownership is significantly lower in Rieselfeld and Vauban than in greater Freiburg, as shown in Table 2. There are .408 cars per capita in Freiburg overall, but only .292 per capita in Rieselfeld, and .169 in Vauban (*17*). There is income diversity in both districts, but very low car ownership in Vauban is likely due to a greater share of low-income households, including a co-housing collective formed by the barracks squatters and a student dormitory. It is also due to the self-selection of households willing to forgo a car in these transit- and bicycle-oriented districts, or in the case of many Vauban residents, to give up a car.

TRAVEL BEHAVIOR IN RIESELFELD AND VAUBAN

Freiburg residents make a considerably greater share of trips by foot, bicycle, and public transit than average Germans, but those in Rieselfeld and Vauban have still higher use of alternative modes, as shown in Figure 6. Figure 6 includes mode share figures for Vauban taken from an independent study completed in 2002, before the tram line was built and only bus service was available (*18*). Mode share data for Rieselfeld and greater Freiburg were obtained from a study conducted by the city in 1999; Vauban was in an early construction phase at that time. Overall German mode share is from national household panel data that are available annually.

Rieselfeld residents used their cars at about the same rate as other Freiburg residents, about one-third of trips. Car-owning households in Vauban used cars a bit less, for 28% of trips. These data may reflect the impact of an intention to drive less by households that self-selected to live in an area where car travel is discouraged. Car-free Vauban households reported making only 2% of trips by car.

Residents of Rieselfeld also use their bicycles at a similar rate to other Freiburgers, for 28% of trips. Vauban residents are distinctly bicycle-oriented, using their bikes as the primary mode of transportation. In 2003, before tram service began, car-owning households reported making 40% of trips by bike, and car-free households reported using bikes for every other trip (51%). This use of bicycles could be considered a success of Vauban's transportation plan, which was intended to make biking the most convenient and frequent mode of travel. It also reflects the self-selection of bicycle-oriented people who chose to live in a city district where bicycles have top priority.

Transit mode share was higher among Rieselfeld residents (25%) than greater Freiburg (18%). This number is notable, considering the average transit trip is longer for these residents at the end of the line. It may reflect a self-selection of transit-oriented people to live in Rieselfeld. The current rate of transit use by Vauban residents will remain unknown until another travel study is completed, but it has certainly increased since tram service began in 2006. Most likely some of the bicycle share has shifted to transit, especially among car-free households.

In Vauban, residents made about one in four trips by walking, regardless of car ownership. This figure could reflect that all destinations, from shopping to kindergartens, are within an easy walk of all residences, because of the compact size of the district (roughly .5 × .3 mi). The extensive greenways make walking very pleasant.

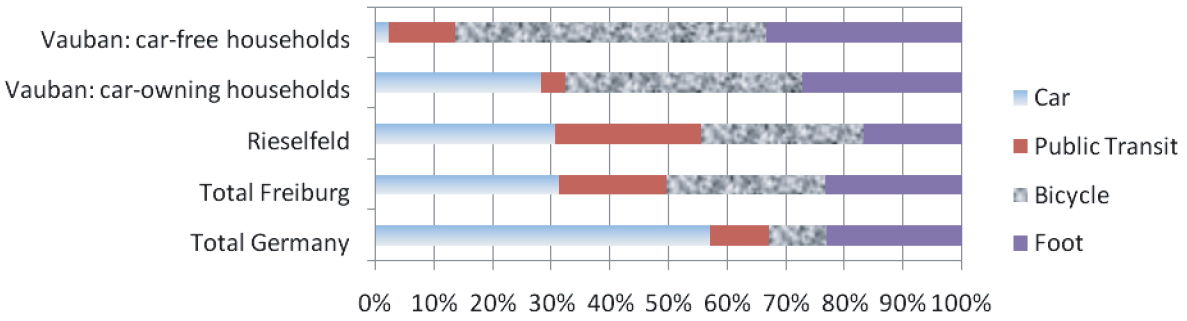


FIGURE 6 Share of trips by mode, 1999 and 2002 (*10*, *18*, *19*).

Reiselfeld's residents, clearly accustomed to walking to transit, make fewer trips by foot (18%) than average for Freiburg residents (23%). These trips almost certainly represent trips within the district, so perhaps the local offering of shops, restaurants, and civic destinations is not as accessible by foot than in the more compact Vauban district.

TRAVEL BY VAUBAN RESIDENTS

All data in this section are taken from a household survey conducted in 2003 by an independent research institute to compare car-owning and car-free households in Vauban (*18*).

The questionnaire asked residents about travel habits, especially changes since moving to Vauban. Many people reported making significant lifestyle changes when they moved, reflecting a desire to be less car-dependent. Car-owning households reported using their car only slightly less frequently, but with other changes in travel habits; 41% reported using their bicycle more often. Among respondents from car-free households, 19% had never owned or had regular access to a car; 57% reported they had given up a car on moving to Vauban. The car-free households also reported increased use of bicycles, buses, trams, taxis, and carsharing services since moving to the district.

For work trips, nearly all car-free households reported commuting by bike (91%). Of car-owning households, 61% reported commuting by bike, a much higher bicycle mode share than Freiburg overall (34%). This response is likely due in part to the lack of tram service in Vauban at the time of the survey, but clearly residents are highly reliant on bicycles and likely self-selected to live in bicycle-oriented Vauban for that reason.

The survey divided shopping trips into two types: daily shopping for perishables and less frequent shopping for bulk quantities. Both car-free (53%) and car-owning (54%) households made their daily purchases at local shops in Vauban. However, car-owning households were likely to use a car for bulk purchasing trips to large stores located outside the district, as shown in Figure 7.

Leisure trips, such as visiting friends or excursions outside the city, also showed that car ownership influenced mode choice. As shown in Figure 8, car-owning households reported using a car for 28% of their leisure trips, a little more frequently than other Freiburg residents (25%); whereas car-free households used a bicycle for most leisure trips (51%).

CONCLUSIONS

Freiburg's new ecosuburbs offer evidence of demand for high-density, mixed-use, family-friendly residential areas that are transit- and bicycle-oriented and within biking distance of the city center. Housing units command high prices and rents in both Rieselfeld and Vauban. In Vauban, families that sought to build housing units without parking spots faced opposition from political leadership and reluctance from financial investors, demonstrating that bundling of housing and parking is a pervasive norm defended even by cities with ambitious environmental goals. Although most housing units in Vauban come with a parking spot, the district has proven popular with families seeking a lifestyle that involves low car use, as evidenced by a low car ownership rate and oversupply of parking.

Residents of both ecosuburbs showed significantly higher rates of transit and bicycle use, in part attributable to high-quality tran-

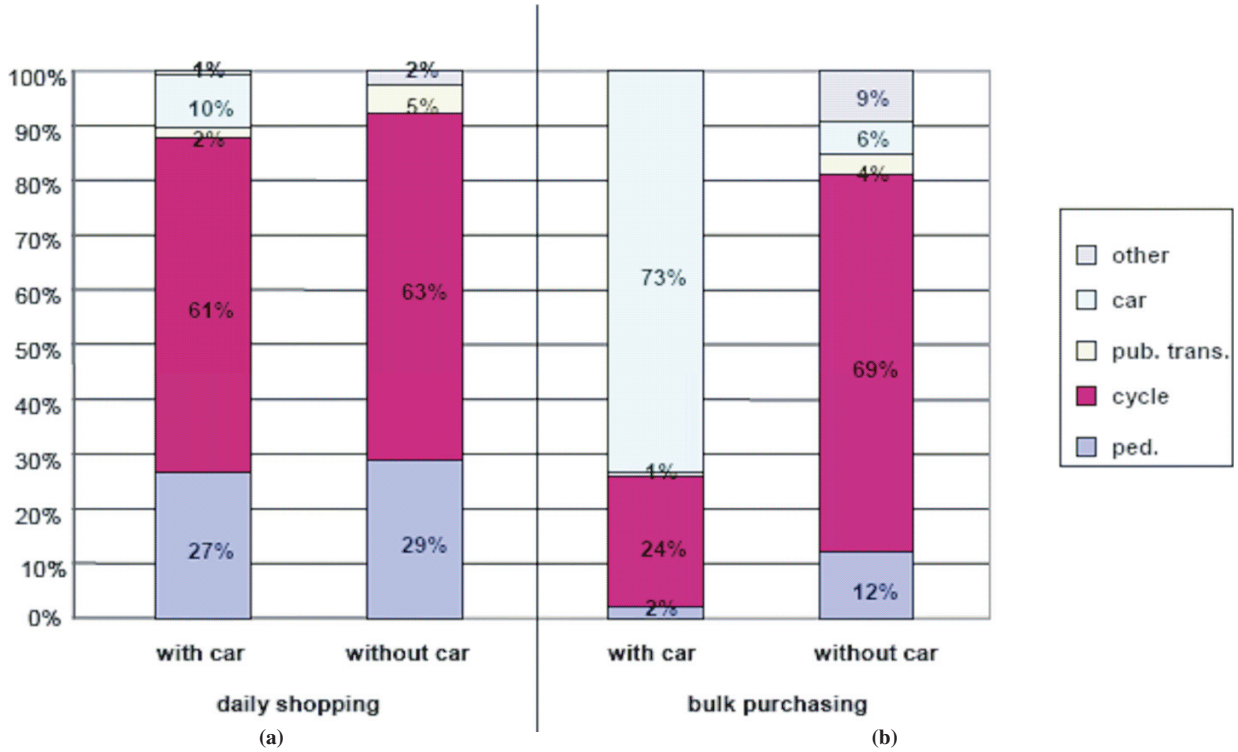


FIGURE 7 Modal split for shopping trips by Vauban residents, 2002, for (*a*) daily shopping and (*b*) bulk purchasing (*18*).

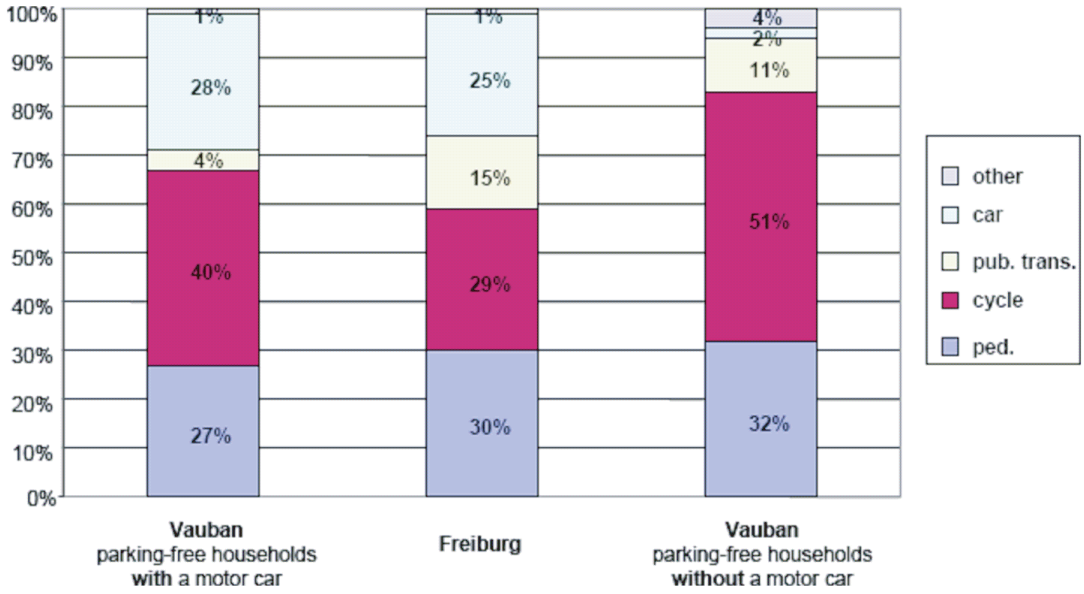


FIGURE 8 Modal split for leisure trips of Vauban residents, 2002 (*18*).

sit service, urban design, and bicycle infrastructure measures. Although car ownership was lower among residents of Rieselfeld, they used their cars at about the same rate as other Freiburg residents. In Vauban, where residential parking is restricted through pricing and lower parking requirements, car ownership is among the lowest in Germany. Unbundling the cost of parking made homes more affordable to residents willing to forgo car ownership. Rates of car use were also lower in Vauban. Separating the parking spatially from the residential property made it less convenient, and therefore less attractive, to use a car. These observations offer evidence that to achieve a reduction in driving, it is important to pair measures encouraging alternative modes with measures discouraging car use.

Self-selection bias must certainly be taken into account in the case of Vauban. People desiring to change their lifestyle were attracted to live there, as demonstrated by a household survey that documented car shedding by many households. Others were likely taking advantage of the cost savings of living a transit- and bicycle-oriented lifestyle and of lower housing costs from unbundled parking. Vauban residents reported a significantly higher bicycling mode share for work, shopping, and leisure trips than the rest of Freiburg. This response can be explained in part by the relative youth and lower incomes of Vauban residents; it is likely that many of these residents were habitual cyclists already or were seeking to give up a car. However, Vauban's bicycle-friendly design (placing bikes within a 2-min walk) and prioritization of bicycle traffic probably exerted some influence on bicycle use. Such bicycle-oriented development deserves further study.

The final question is this: What can the United States learn from these ecosuburbs? Are they a replicable model? Naysayers might say that Vauban is merely an enclave of wealthy and politically savvy environmental activists who managed to build their eco-topia under unique circumstances. Optimists might counter that Vauban represents a new family-friendly product that is undersupplied under conventional regulations. They might point to the oversupply of residential parking in both ecosuburbs as evidence that residential parking is a cost burden forced upon many households by politicians and financiers who are too risk-averse to relax parking requirements. In either case, transit service and bike infrastructure quality, as well as cultural norms about driving, are significantly different in most U.S. cities.

An incremental approach that might be palatable to U.S. families seeking family-friendly communities and a lifestyle less dependent on cars would be to adopt some of the design and policy elements that make ecosuburbs safe and popular for children, such as higher-density housing fronting on play streets and looking out over playgrounds and greenways; streets with low speed limits and parking areas on the periphery of living areas; mixed land uses ensuring that shopping, education, and civic destinations are within walking distance of homes; high-quality transit service and pedestrian and bicycle paths; and lower minimum parking standards with the cost of parking unbundled from housing. Whether these elements can be replicated at transit-supportive housing densities, or at all in the United States, remains to be seen.

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