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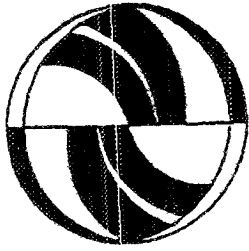
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**Parking Cash Out:  
Chapters 1 and 22-28 from the manuscript  
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Donald C Shoup

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UCTC No. 528

**The University of California  
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**Parking Cash Out**  
**(Chapters 1 and 22-28 from the manuscript of)**  
**The High Cost of Free Parking**

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The University of California Transportation Center  
University of California at Berkeley

# PARKING CASH OUT

(Chapters 1 and 22-28 from the manuscript of)  
*The High Cost of Free Parking*

Prepared for Roundtable 121  
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Paris, November 29 and 30, 2001

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# PARKING CASH OUT

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# PARKING CASH OUT

## EXECUTIVE SUMMARY

Employer-paid parking is the most common tax-exempt fringe benefit offered to workers in the United States, and 95 percent of American automobile commuters park free at work. All this free parking *at work* helps to explain why 91 percent of all commuters drive *to work*, and why 91 percent of commuters' cars have only one occupant. When it comes to free parking, commuters, and solo driving in the US, all percentages are in the nineties

Many solo drivers who park free would still drive to work alone even if they had to pay for parking. Employer-paid parking replaces a payment these free parkers would otherwise make, and it does not change their mode choice. But some free parkers drive solo because they can park free, if they had to pay for parking, they would carpool, ride public transit, walk, or bike to work. Employer-paid parking changes these free parkers' mode choice to solo driving. Case studies and statistical models suggest that—compared with driver-paid parking—employer-paid parking increases the number of cars driven to work by about 33 percent.

To reduce the traffic congestion and air pollution caused by employer-paid parking, California requires some employers to offer commuters the option to take the cash equivalent of any parking subsidy offered. Offering commuters the choice between a parking subsidy *or its cash equivalent* shows that even free parking has an opportunity cost—the foregone cash. The option to cash out employer-paid parking thus raises the effective price of commuter parking *without* charging commuters for parking. It rewards commuters who do not drive to work alone, and it therefore increases the share of commuters who carpool, ride public transit, walk, or bike to work.

Case studies of parking cash out in California found that the commuters' solo-driver share fell from 76 percent before parking cash out to 63 percent afterward. The carpool share rose from 14 percent to 23 percent, the transit share rose from 6 percent to 9 percent, and the combined walk/bicycle share rose from 3 percent to 4 percent. Three times more commuters switched to carpools than to public transit, which shows that parking cash out can reduce solo driving even where public transit is not available. Parking cash out takes advantage of a greatly underused transportation capacity—all the empty seats in cars on the road to work during peak commuting hours.

The commuters' mode shifts produced substantial reductions in vehicle travel, fuel consumption, and vehicle emissions. After employers began to offer parking cash out, commuters traveled 652 fewer vehicle-miles (1,043 vehicle-kilometers) to work per employee per year. This reduction in vehicle travel saved 26 gallons (99 liters) of gasoline per employee per year. Finally, the reduction in fuel consumption for commuting reduced CO<sub>2</sub> emissions by 367 kilograms per employee per year.

The employers' spending for parking declined by almost as much as their cash payments in lieu of parking increased, so their total spending to subsidize commuting rose by only \$2 per employee per month. Federal and state income tax revenues rose by \$65 per employee per year because many commuters voluntarily traded their tax-exempt parking subsidies for taxable cash. Employers praised parking cash out for its simplicity and fairness, and said that it helps to recruit and retain employees. The benefit/cost ratio of the cash-out programs is at least 4-to-1. In summary, parking cash out provides benefits for commuters, employers, taxpayers, and the environment. All these benefits result from subsidizing people—*not* parking.

Parking cash out allows employers to offer free parking to solo drivers and an equal benefit to commuters who don't drive to work. Parking cash out can therefore eliminate any unintended bias in employer-paid parking. Women and minorities are less likely than other commuters to drive to work alone, and more likely to ride transit. For example, 78 percent of White commuters drive to work alone, and only 2 percent ride public transit. Among African-American commuters, only 58 percent drive to work alone, and 16 percent ride public transit. Because parking cash out gives an equal benefit to commuters regardless of their mode choices, it eliminates any inadvertent discrimination according to gender, ethnicity, or any other demographic variable that may be related to work travel.

Avoiding gender and ethnic bias in transportation policy is simple "transportation justice." Employers subsidize parking for 33 percent of all automobile travel in the US, and employer-paid parking is a tax-exempt fringe benefit. Transportation justice therefore requires a fair distribution of this tax-exempt benefit.

Because employer-paid parking is a tax-exempt fringe benefit, the federal government subsidizes free parking at work. The free parking then encourages most commuters to drive to work

alone. A simple solution to this problem is a minor amendment to the tax code. The roman text quoted below is the Internal Revenue Code's existing definition of employer-paid parking that is qualified for a tax exemption; *the italic text is the proposed amendment*

Section 132(f)(5)(C) QUALIFIED PARKING – The term “qualified parking” means parking provided to an employee on or near the business premises of the employer *if the employer offers the employee the option to receive, in lieu of the parking, the fair market value of the parking*

Employer-paid parking would remain a tax-exempt fringe benefit only if the employer offers commuters the option to take taxable cash in lieu of the parking itself. Commuters could spend the cash for public transit, carpooling, walking, bicycling, or any other purpose. Employer-paid parking *without* the cash-out option would *not* qualify for tax exemption. This minor amendment can significantly reduce the economic and environmental costs that the tax exemption for employer-paid parking creates. Requiring employers to offer commuters the *option* to cash out their tax-exempt parking subsidies can

1. Conserve gasoline
2. Improve air quality.
3. Reduce traffic congestion
4. Reduce the risk of climate change
5. Increase tax revenue without increasing tax rates
6. Increase employee benefits without increasing employers' costs

*A minor tax reform can provide all these economic and environmental benefits simply by allowing commuters to choose how they wish to spend their own income.*



# 1. INTRODUCTION: THE 21<sup>st</sup> CENTURY PARKING PROBLEM

*You don't know what you've got till it's gone.  
They paved paradise and put up a parking lot.*

JONI MITCHELL

American children first learn about free parking when they play *Monopoly*. Players buy property, build hotels, or go to jail after tossing the dice—but sometimes they land on “Free Parking” When children grow up and get their own cars, the odds of landing on free parking increase dramatically because drivers park free for 99 percent of all automobile trips in the United States <sup>1</sup>

If drivers don't pay for parking, who does? After drivers leave their cars to shop in a store, eat in a restaurant, or see a movie, they pay for parking indirectly because the cost of parking is bundled into the prices for merchandise, meals, and movies Parking is free to drivers only because its cost is hidden in higher prices for everything else, and even nondrivers who walk, bicycle, ride transit, or stay at home indirectly pay for parking

We all pay for parking indirectly because most cities require ample off-street parking for every land use, and the cost of providing the required parking increases the cost of all real estate development Residents pay for parking through higher prices for housing Employers pay for parking through higher office rents Ultimately, we pay for parking through higher prices for just about everything we buy. Only in our role as motorists do we *not* pay for parking

To set the scene for this report, and to suggest its global importance, I will begin by forecasting the whole world's parking demand if other nations ever acquire as many cars as the US owned at the end of the 20<sup>th</sup> century

One way to forecast parking demand is to project the growth of vehicle ownership Figure 1-1 shows the US vehicle-ownership rates (motor vehicles per 1,000 persons) from 1900 to 1996 The 1996 vehicle-ownership rates for 15 other nations are placed to correspond with the year in which the US had the same rate For example, in 1996 Australia had the same vehicle-ownership rate as the US in 1972, Denmark the same as the US in 1958, and China the same as the US in 1911 <sup>2</sup>

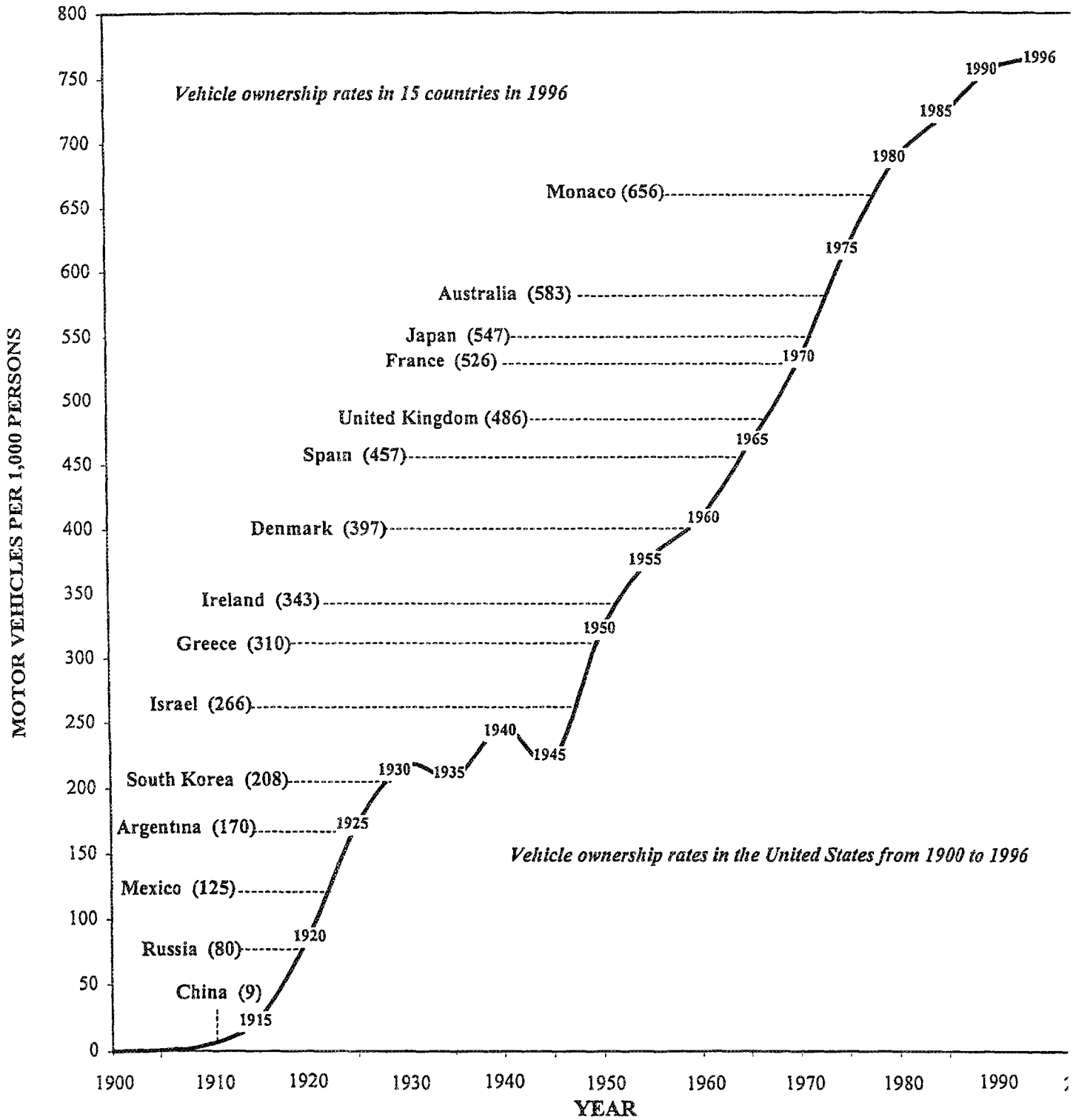
Figure 1-1

The world outside the US, taken together, owned only 84 vehicles per 1,000 persons in 1996—the same as the US rate in 1919—but they are catching up. Since 1950 the number of

Figure 1-1

VEHICLE OWNERSHIP RATES IN THE UNITED STATES FROM 1900 TO 1996  
AND VEHICLE OWNERSHIP RATES IN 15 OTHER COUNTRIES IN 1996

(Motor vehicles per 1,000 persons)



Source Tables H-1 and H-2 in Appendix H

vehicles has grown 6.9 percent per year outside the US and only 3.2 percent per year inside the US.<sup>3</sup> Figure 1-2 shows that the US owned half the world's vehicles in 1965, but only 31 percent in 1996.

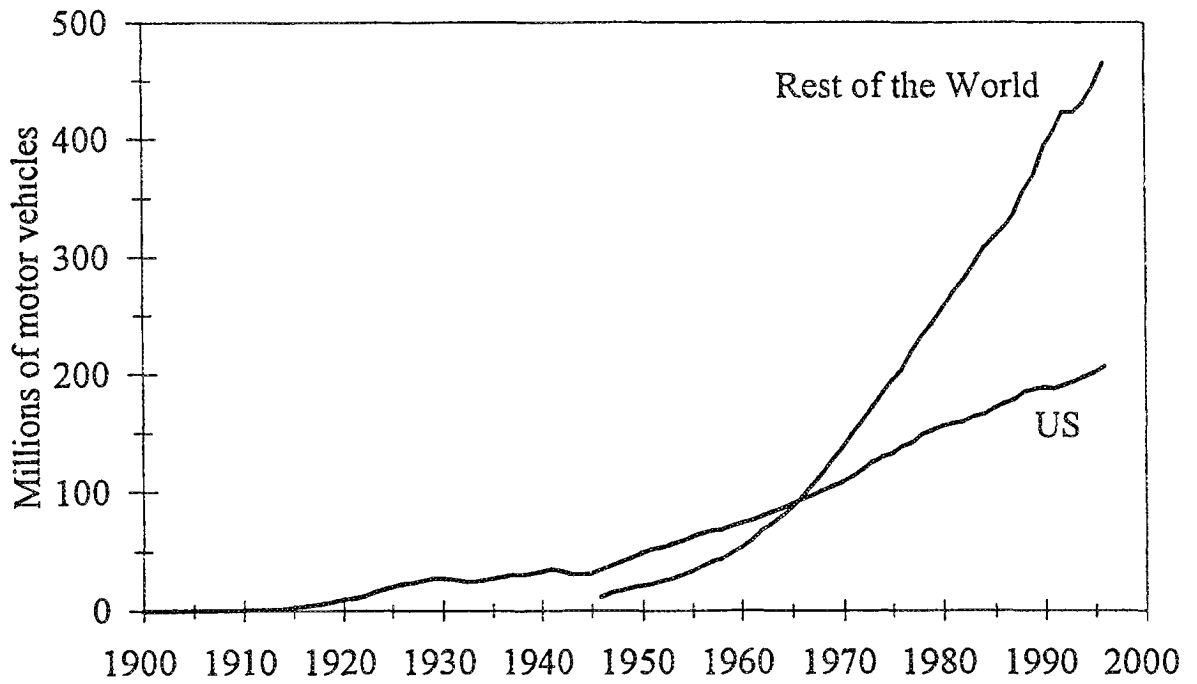
Figure 1-2

If the whole world had owned 778 vehicles per 1,000 persons in 1996 (the US ownership rate in that year) there would have been 4.5 *billion* vehicles—almost seven times the actual number of vehicles on earth in 1996.<sup>4</sup> How much land would it take to park 4.5 billion vehicles? A parking lot big enough to hold 4.5 billion cars would occupy an area about the size of England or Greece.<sup>5</sup> There are at least four parking spaces per car in the US; at this rate, 4.5 billion cars would require a parking lot about the size of France or Spain.<sup>6</sup> More cars would also require more land for roads, gas stations, used car dealers, automobile graveyards, and tire dumps.<sup>7</sup>

If present trends continue, the world could easily have 4.5 billion cars before the end of the 21<sup>st</sup> century. For example, if the world's vehicle population grows by only 3 percent a year during the 21<sup>st</sup> century, the total number of vehicles will increase from 671 million in 1996 to 12.9 billion in 2096. A projection is not a good forecast, however, because technology and policy can change. For example, horse manure littered city streets a century ago. Projected growth in transportation demand made a public health disaster seem inevitable, but then horseless carriage arrived and solved the manure problem. The horseless carriages now create a parking problem, but new solutions will arrive—and my research explores one promising solution: *parking cash out*. After all, we don't want to pave France or Spain to put up a parking lot.



FIGURE 1-2  
NUMBER OF MOTOR VEHICLES ON EARTH



Source Table H-1 in Appendix H