

Cost of Recreational Activities for Low- and Middle-Income American (LMI) Families (2001 – 2021)

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Objective

In this research, we argue that studying the affordability of leisure for Americans in the 21st century is imperative to understanding the evolution of the American Dream. We specifically focus on recreational activities that occur during individuals' leisure time. While leisure is commonly conceptualized as free time, a state of being away from work, or freedom from necessity of labor, recreation specifically encompasses activities done during leisure time, especially activities which provide benefits to individuals and society. For example, many recreational activities provide benefits to physical, mental, and social health.¹

The focus on cost

At the Ludwig Institute for Shared Economic Prosperity (LISEP), we chose to focus on the cost of recreational activities. The reason is simple: rising costs have been consistently cited as the primary reason that has prevented Americans from pursuing several recreation activities during their leisure time. In a 2019 press release, the U.S. Travel Association announced that American workers collectively wasted 768 million vacation days in 2018, citing cost as the top barrier.² According to University of Utah researchers, the skyrocketing cost of youth sports is the number one reason fewer and fewer children, especially from low- and middle-income (LMI) backgrounds, are playing sports.³ The State of Play report from the Aspen Institute concluded that parents spent an average of \$693 per child, per year for one sport, which results in most children quitting sports by age 11.⁴ Disney World, once thought to be a must-take trip for all families, has now become a “luxury-priced destination,” with prices for one-day adult tickets increasing from \$3.50 in 1971 to \$159 in 2019, a staggering increase of more than 3000%.⁵ And the list goes on. Although the right to leisure is recognized in the United Nations Declaration of Human Rights,⁶ American households experience significant financial barriers to engaging in recreational activities during their leisure time. In this light, we start by conceptualizing the “minimal adequate needs” of recreation, that is the activities necessary for American households to maintain a minimum level of physical, mental, and social health. We trace the cost of participating in a set of recreational activities for the period

¹ LISEP would like to thank Dr. Sammie Powers for her invaluable contribution to the formulation of this methodology.

² Alford, T. (2019, November 11). *Study: A Record 768 Million U.S. Vacation Days Went Unused in '18, Opportunity Cost in the Billions*. U.S. Travel Association. Retrieved January 20, 2022, from <https://www.ustravel.org/press/study-record-768-million-us-vacation-days-went-unused-18-opportunity-cost-billions>.

³ Barone, E. (2017, August 24). *The Astronomical Cost of Kids' Sports*. Time. Retrieved January 20, 2022, from <https://time.com/4913284/kids-sports-cost/>.

⁴ *Survey: Kids Quit Most Sports By Age 11*. (2019, August 1). The Aspen Institute Project Play. Retrieved January 20, 2022, from <https://www.aspenprojectplay.org/national-youth-sport-survey/kids-quit-most-sports-by-age-11>.

⁵ Passy, J. (2021, October 4). *In its 50-year history, Walt Disney World has evolved from a \$3.50-a-ticket amusement park to a “luxury-priced destination.”* MarketWatch. Retrieved January 20, 2022, from <https://www.marketwatch.com/story/how-walt-disney-world-went-from-3-50-a-ticket-to-becoming-a-luxury-priced-destination-11633108165>.

⁶ The United Nations. (1948). *Universal Declaration of Human Rights*.

2001-2020. Our goal is to assess the percentage of American households that are still able to afford minimal recreation after satisfying their basic living needs (housing, food, healthcare, etc.) compared to the onset of the century.

Connection to the True Living Cost Index (TLC)

In a separate effort, we, at LISEP, estimated the true living cost for LMI American families.⁷ We did that by constructing a bundle of goods and services that households in which the adult(s) work full-time jobs and earn median wages require to satisfy their minimal adequate needs. We define those needs as the ones necessary for a household of a given size to lead a life in which they can purchase goods and services that meet a certain level of quality, with the goal of maintaining reasonable physical and mental health without falling out of their socioeconomic status. We emphasize the “basic” nature of these needs in constructing this consumption bundle by not accounting for the expenses of any recreational, higher education, or civic activities. This research on the cost of recreation comes as a complement to the TLC Index. It asks the question: “after households meet their minimal adequate needs (which does not imply thriving), how much would it cost for them to participate in recreational activities?” Here too, we seek to stress the “essential” nature of the activities we chose for the recreation bundle, with chosen activities informed based both on popularity among the American public as well as activities that provide essential physical, mental, and social benefits. Our goal is to allocate activities to LMI households that help them maintain a minimum of physical, mental, and social health, while also accounting for the popularity of certain recreational activities.

Why leisure?

In the period from 1894 to 1915, when industrial employers instituted a Saturday half-day holiday and began offering unpaid vacation days, Americans welcomed recreational activities into their lives.⁸ Motion pictures became a very popular entertainment channel for urban Americans, sports became a common pastime with the opening of public gymnasiums and YMCAs, and Americans increasingly ventured to the countryside and beaches for vacation.⁹ And so enjoying leisure time became a prime characteristic of the American Dream. In his book titled *Free Time: The Forgotten American Dream*, historian Benjamin Kline Hunnicutt argues that “economic, political, and civic ends” were never final or complete in the American imagination.¹⁰ Their function was as “means” to lead to the pursuit of happiness, which, in Hunnicutt’s words, was understood as “a cultural opening in which humans practice the skills of living together.”¹¹ In this sense, participating in leisure activities becomes an act of community building. In short, most Americans in the 18th and 19th centuries viewed society’s ultimate progress as freedom from scarcity and the ability to engage in recreational activities outside work settings.¹²

Functions of recreation

⁷ Ludwig Institute for Shared Economic Prosperity. (2022). *What Is the “True Living Cost (TLC) Index”?* Retrieved July 19, 2022, from <https://www.lisep.org/costs>.

⁸ *America at Work, America at Leisure: Motion Pictures from 1894–1915*. (n.d.). The Library of Congress. Retrieved January 20, 2022, from <https://www.loc.gov/collections/america-at-work-and-leisure-1894-to-1915/articles-and-essays/america-at-leisure/>.

⁹ Ibid.

¹⁰ Hunnicutt, B. (2013). *Free Time: The Forgotten American Dream*. Temple University Press, p.2.

¹¹ Ibid., p.3.

¹² Ibid.

I. Adults

We seek to highlight the mechanisms through which recreation ensures a healthy life for a working-age adult. First, several studies have established that participating in recreational activities supports mental recovery from stress and strain, which is “a crucial and recurrent self-regulatory task in everyday life.”¹³ Such activities range from social activities that facilitate recovery through “social support” to physical activities that provide an opportunity for “psychological detachment” and set off several physiological processes that promote mental recovery.¹⁴ We do not solely view the function of recreation as hedonic, that is inducing happiness and cultivating a good mood. Research has made it clear that non-hedonic dimensions of recreational activity are equally effective in promoting mental recovery. Examples of non-hedonic pathways to mental recovery are disconnecting one’s brain from daily preoccupations, cultivating skills, and “the satisfaction of the intrinsic needs for competence, autonomy, and relatedness.”¹⁵ In a nutshell, it is important for working-age adults to participate in “minimal” recreational activities to ensure that the strain of life’s responsibilities does not impede them from carrying out these very responsibilities.

Second, many recreational activities provide opportunities for both physical recovery and activity, which are incredibly important for current physical health and longevity. Researchers have found that moderately intense physical activity is significantly correlated with the physical and mental elements of quality of life.¹⁶ An array of recreational activities such as park visitation, participation in outdoor recreation, and playing team sports provide opportunities for physical activity, and in turn, physical health benefits.^{17,18} In fact, parks and outdoor recreation spaces are increasingly recognized as essential components of our healthcare system.¹⁹

Studies have consistently shown that physical inactivity is strongly correlated with chronic diseases, irrespective of race, age, and sex.²⁰ Moreover, epidemiological studies demonstrated that being physically active reduces that risk of various chronic diseases.²¹ Recreational activities that provide these benefits are also key to being sufficiently physically healthy to carry out one’s work

¹³ Reinecke, L., & Eden, A. (2017). *Media use and recreation: Media-induced recovery as a link between media exposure and well-being*. In L. Reinecke & M.B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 106-117). New York: Routledge.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Iwasaki, Y. (2006). Leisure and quality of life in an international and multicultural context: what are major pathways linking leisure to quality of life? *Social Indicators Research*, 82(2), 233–264. <https://doi.org/10.1007/s11205-006-9032-z>.

¹⁷ Bailey, R., Cope, E., & Parnell, D. (2015). Realising the benefits of sports and physical activity: the human capital model. *Retos: Nuevas Perspectivas de Educación Física, Deporte y Recreación*, (28), 147-154.

¹⁸ Bedimo-Rung, A. L., Mowen, A. J., & Cohen, D. A. (2005). The significance of parks to physical activity and public health: A conceptual model. *American Journal of Preventive Medicine*, 28(2), 159–168. <http://doi.org/c36s53>

¹⁹ Mowen, A. J., Barrett, A. G., Graefe, A. R., Kraschnewski, J. L., & Sciamanna, C. N. (2017). “Take in two parks and call me in the morning”—Perception of parks as an essential component of our healthcare system. *Preventive Medicine Reports*, 6, 63-65.

²⁰ Haskell, W. L., Blair, S. N., & Hill, J. O. (2009). Physical activity: Health outcomes and importance for public health policy. *Preventive Medicine*, 49(4), 280–282. <https://doi.org/10.1016/j.ypmed.2009.05.002>.

²¹ Examples of such diseases are “blood pressure, atherogenic lipoprotein profile, blood clotting/fibrinolysis, insulin-mediated glucose uptake, bone and muscle strength, autonomic nervous system regulation.” Source: Ibid.

and family duties. Thus, in our recreation budget, we aim to include the cost of essential goods and services that allow LMI adults to be physically active through recreation.²²

Lastly, recreational activities are important for individual and community social health. We conceptualize social health as encompassing the interrelated aspects of interactions across people from different social groups, social capital, and democratic/civic participation. Recreation facilitates social interactions and building “social capital,” which is understood to encompass trust, norms, resources, and reciprocity arising from social interactions and connections.^{23,24,25} Social capital can strengthen community social fabric and democratic participation.^{26,27} Social capital is commonly defined as a three-dimensional concept encompassing bonding capital, bridging capital, and linking capital. While bonding social capital refers to social relationships between individuals from similar social groups, such as people of the same socio-economic status or of the same race, bridging social capital refers to a larger social network that “bridges” connections between different social groups, such as people of different socio-economic levels.²⁸ Research has shown that bridging social capital is especially valuable for linking individuals to different resources and levels of the social system (i.e., linking social capital).²⁹ For LMI individuals, linking social capital has the potential to connect them to resources for personal and professional advancement that can support both youth and adults, and research suggests that recreational activities and settings are associated with social capital development.^{30,31,32,33} For example, parks can encourage social

²² Some may argue that LMI families that earn their income from physical labor (construction, farm work, etc.) do not need to dedicate a part of their recreation budget to physical activities because they already being physically active. However, researchers found that “occupational physical activity (OPA)” does not promote positive health outcomes. The contrary is in fact true; it can in many cases be detrimental to health. Research has shown that OPA “increases the risk for cardiovascular disease (CVD) and mortality outcomes, even after extensive adjustments for other risk factors including socioeconomic status, [leisure time physical activity] LTPA and other health behaviours.” Source: Holtermann, A., Krause, N., van der Beek, A. J., & Straker, L. (2017). The physical activity paradox: six reasons why occupational physical activity (OPA) does not confer the cardiovascular health benefits that leisure time physical activity does. *British Journal of Sports Medicine*, 52(3), 149–150.

<https://doi.org/10.1136/bjsports-2017-097965>.

²³ Bourdieu, P. (1986). The forms of capital. In: Handbook of theory and research for the sociology of education. JG Richardson. New York, Greenwood, 241(258), 19.

²⁴ Coleman, J. S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94, S95–S120.

²⁵ Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon & Schuster.

²⁶ Hemingway, J. L. (1999). Leisure, Social Capital, and Democratic Citizenship. *Journal of Leisure Research*, 31(2), 150–165. <https://doi.org/10.1080/00222216.1999.11949855>.

²⁷ Powers, S., & Webster, N. (2021). A conceptual model of intergroup contact, social capital, and youth civic engagement for diverse democracy. *Local Development & Society*, 1-18.

²⁸ Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon & Schuster.

²⁹ Enfield, R. (2008). Social capital and implications for positive youth development. *Monograph*, 1998, 1–18. November 10, 2019. <http://4h.ucanr.edu/files/1224.pdf>

³⁰ Holtan, M. T., Dieterlen, S. L., & Sullivan, W. C. (2015). Social life under cover: tree canopy and social capital in Baltimore, Maryland. *Environment and Behavior*, 47(5), 502-525.

³¹ Pitas, N. A., Hickerson, B. D., Koerte, T., Kerstetter, D., & Mowen, A. J. (2017). “A unifying force in the community”: Perceptions of a neighborhood park renovation. *Community Development*, 48(3), 420-435.

³² Perks, T. (2007). Does sport foster social capital? The contribution of sport to a lifestyle of community participation. *Sociology of Sport Journal*, 24(4), 378-401.,

³³ Pitas, N. A., Mowen, A. J., & Powers, S. L. (2021). Person-place relationships, social capital, and health outcomes at a nonprofit community wellness center. *Journal of Leisure Research*, 52(2), 247-264.

capital development, especially among low-income families with children.³⁴ Furthermore, at the community level, research has shown that higher levels of social capital are commonly associated with lower levels of various types of crime.^{35,36} Thus, recreational activities which support social capital development provide valuable benefits for LMI individuals and their communities.

An all-encompassing American culture where active participation in democracy is encouraged necessitates members of society to participate in recreational and civic activities. In a seminal article titled *Leisure, Social Capital, and Democratic Citizenship*, J.L. Hemingway argues that participating in recreational activities during leisure time and interacting with members of society allows for building “a person’s social repertoire, enabling her/him to deal with specific aspects of social relations.”³⁷ Regarding the role of leisure in democratic citizenship, Hemingway underlines the fact that the nature of the participatory democracy in the U.S. demands citizens’ engagement. The importance of recreational activities in building social capital is particularly urgent in a time when such capital is reportedly declining. Findings from the General Social Survey (GSS) indicate that more and more Americans say that they have never interacted with their neighbors³⁸ and Pew reports show just over half of Americans (around 53%) voted in the 2020 general election.³⁹ Thus, participating in recreation and civic activities, from this lens, is intrinsic to maintaining a vibrant American society and healthy democratic institutions.

II. Youth

Similar to the benefits provided to adults, recreational activities provide important health benefits to youth. Recreational activities, especially outdoors, are also critical for physical fitness, which researchers have found to correlate positively with cognitive development and academic performance.⁴⁰ Many recreational activities, including visits to parks and playgrounds, playing sports, and participating in outdoor recreation, provide opportunities for physical activity, an important determinant of health both in childhood and adulthood.⁴¹ For example, research shows that participation in youth sports is associated with higher levels of physical activity not only

³⁴ Mullenbach, L. E., Larson, L. R., Floyd, M. F., Marquet, O., Huang, J. H., Alberico, C., ... & Hipp, J. A. (2022). Cultivating social capital in diverse, low-income neighborhoods: The value of parks for parents with young children. *Landscape and Urban Planning*, 219, 104313.

³⁵ Robison, L. J., Siles, M. E., & Jin, S. (2011). Social capital and the distribution of household income in the United States: 1980, 1990, and 2000. *The Journal of Socio-Economics*, 40(5), 538-547.

³⁶ Galea, S., Karpatis, A., & Kennedy, B. (2002). Social capital and violence in the United States, 1974–1993. *Social science & medicine*, 55(8), 1373-1383.

³⁷ Ibid.

³⁸ Poon, L. (2015, August 19). *Why Won't You Be My Neighbor?* Bloomberg CityLab. Retrieved January 21, 2022, from <https://www.bloomberg.com/news/articles/2015-08-19/why-americans-are-less-likely-to-interact-with-their-neighbors-than-ever-before>.

³⁹ Daniller, A., & Gilbertstadt, H. (2020, December 15). *Key findings about voter engagement in the 2020 election*. Pew Research Center. Retrieved January 21, 2022, from <https://www.pewresearch.org/fact-tank/2020/12/14/key-findings-about-voter-engagement-in-the-2020-election/>.

⁴⁰ Haapala, E. A. (2013). Cardiorespiratory Fitness and Motor Skills in Relation to Cognition and Academic Performance in Children – A Review. *Journal of Human Kinetics*, 36(1), 55–68. <https://doi.org/10.2478/hukin-2013-0006>.

⁴¹ Bailey, R., Cope, E., & Parnell, D. (2015). Realising the benefits of sports and physical activity: the human capital model. *Retos: Nuevas Perspectivas de Educación Física, Deporte y Recreación*, (28), 147-154.

during childhood, but also greater persistence in physical activity later in life.⁴² Given that physical inactivity is associated with higher levels of obesity and greater risk of chronic disease, recreational activities that promote youth physical activity are essential.⁴³ Furthermore, recreational activities are frequently associated with positive youth development because of the additional benefits they provide, including providing positive role models for youth, safe environments, and diversions from risky behaviors.⁴⁴

Another important function of recreation for youth is enhancing their ability to learn. The American Academy of Pediatrics established that play is essential for children's healthy brain development.⁴⁵ Research from the National Wildlife Federation showed that exposure to the outdoors through recreational activities reduced youth's school-related stress and improved their sleep quality.⁴⁶ Other research has shown that when in nature, youth form social connections more easily and their wellbeing outcomes improve significantly.⁴⁷ This was reinforced in Article 31 of the Convention on the Rights of the Child adopted in 1990, which emphasized the right of children to play.⁴⁸ With this in mind, we determined that a part of the household's recreation budget ought to be allocated to recreation and play for youth.

Recreational Activities

I. Dining Out

A. Rationale

According to the Simmons National Consumer Survey (2018), dining out with friends and family is one of the most popular recreational activities in the United States.⁴⁹ In a 2017 survey by Pew Research, 69% of adults surveyed said that spending time with family “provides a great deal of meaning and fulfillment in their lives” while 47% said the same about spending time with friends.⁵⁰ Spending time with family, friends, and neighbors is a common way of relaxing and disconnecting from work. Recent findings from the 2021 American Perspectives Survey show that most Americans rely on friends and family for personal support and that two thirds of Americans have

⁴² Lee, J. E., Pope, Z., & Gao, Z. (2018). The role of youth sports in promoting children's physical activity and preventing pediatric obesity: a systematic review. *Behavioral Medicine*, 44(1), 62-76.

⁴³ Anderson, E., & Durstine, J. L. (2019). Physical activity, exercise, and chronic diseases: A brief review. *Sports Medicine and Health Science*, 1(1), 3-10.

⁴⁴ Berdychevsky, L., Stodolska, M., & Shinew, K. J. (2019). The roles of recreation in the prevention, intervention, and rehabilitation programs addressing youth gang involvement and violence. *Leisure Sciences*, 1-23.

⁴⁵ Ginsburg, K. R. (2007). The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds. *Pediatrics*, 119(1), 182–191. <https://doi.org/10.1542/peds.2006-2697>.

⁴⁶ Gagnon, S. (2018, August 30). *Reducing Student Stress through Nature*. The National Wildlife Federation Blog. Retrieved January 21, 2022, from <https://blog.nwf.org/2018/08/reducing-student-stress-through-nature/>.

⁴⁷ Warber, S. L., DeHudy, A. A., Bialko, M. F., Marselle, M. R., & Irvine, K. N. (2015). Addressing “Nature-Deficit Disorder”: A Mixed Methods Pilot Study of Young Adults Attending a Wilderness Camp. *Evidence-Based Complementary and Alternative Medicine*, 2015, 1–13. <https://doi.org/10.1155/2015/651827>.

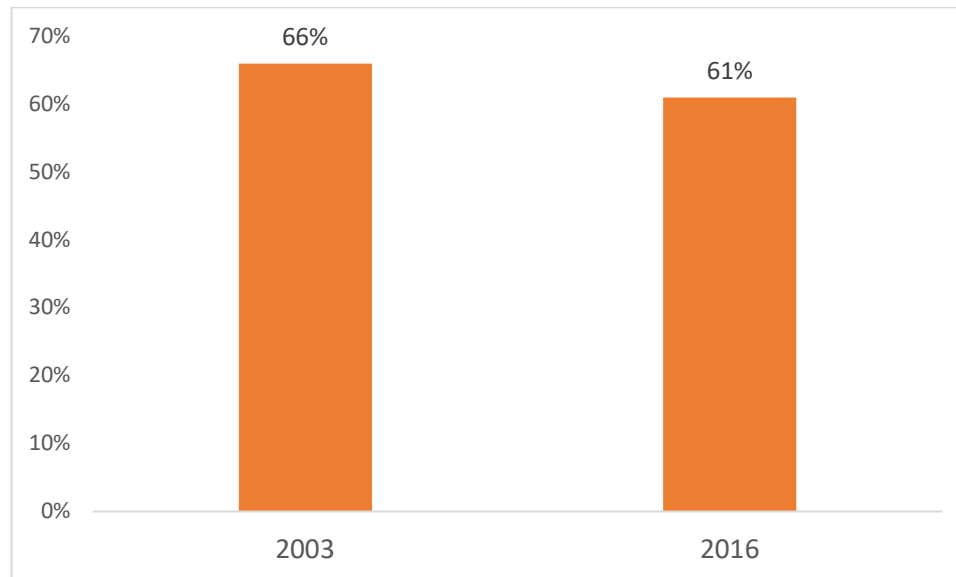
⁴⁸ *Convention on the Rights of the Child*. (1990, September 2). Office of the United Nations High Commissioner for Human Rights. Retrieved January 21, 2022, from <https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>.

⁴⁹ Pinkus, A. (2019, December 14). *Cultural Ties: Where Americans Meet and Part on Leisure Time*. American Communities Project. Retrieved January 21, 2022, from <https://www.americancommunities.org/cultural-ties-where-americans-meet-and-part-on-leisure-time/>.

⁵⁰ *Where Americans Find Meaning in Life*. (2018, November 20). Pew Research Center. Retrieved January 21, 2022, from <https://www.pewforum.org/2018/11/20/where-americans-find-meaning-in-life/>.

a childhood friend.⁵¹ We chose to focus on the cost of dining out due to the social benefits it provides. It has increasingly become a way that many Americans spend time with friends and family during their leisure time.⁵² Gallup polls show that, at least 60% of Americans consistently ate at a restaurant at least once in the past week since 2003.

Figure 1: Percent of respondents in Gallup poll who said they have eaten at a restaurant of any kind one or more times in the past week



Source: Saad, L. (2017, January 11). *Americans' Dining-Out Frequency Little Changed From 2008*. Gallup. Retrieved June 13, 2022, from <https://news.gallup.com/poll/201710/americans-dining-frequency-little-changed-2008.aspx>.

B. Pricing

To trace the cost of dining out over the past two decades, we use the Per Diem data from the U.S. General Services Administration (GSA). Per diem payments are “are daily allowances paid to employees to cover costs incurred while on a business trip.”⁵³ The GSA issues standard per diem rates and separately, rates for Non-Standard Areas (NSAs).⁵⁴ NSAs are areas that “are frequently traveled by the federal community.” We use both standard per diem rates that apply to almost 85% of counties in the continental U.S. as well as nonstandard rates that apply in metropolitan areas.⁵⁵ The cost of per diem meals includes breakfast, lunch, dinner, meal taxes and tips, and incidentals, which are “fees and tips given to porters, baggage carriers, hotel staff, and staff on ships.”⁵⁶ We

⁵¹ Cox, D. A. (2021, June 8). *The state of American friendship: Change, challenges, and loss*. The Survey Center on American Life. Retrieved January 21, 2022, from <https://www.americansurveycenter.org/research/the-state-of-american-friendship-change-challenges-and-loss/>.

⁵² Saad, L. (2017, January 11). *Americans' Dining-Out Frequency Little Changed From 2008*. Gallup. Retrieved June 13, 2022, from <https://news.gallup.com/poll/201710/americans-dining-frequency-little-changed-2008.aspx>.

⁵³ Kagan, J. (2021, June 27). *What Are Per Diem Payments?* Investopedia. Retrieved April 28, 2022, from <https://www.investopedia.com/terms/p/per-diem-payments.asp>.

⁵⁴ U.S. General Services Administration. (n.d.). *Frequently Asked Questions, Per Diem*. Retrieved April 28, 2022, from <https://www.gsa.gov/travel/plan-book/per-diem-rates/frequently-asked-questions-per-diem>.

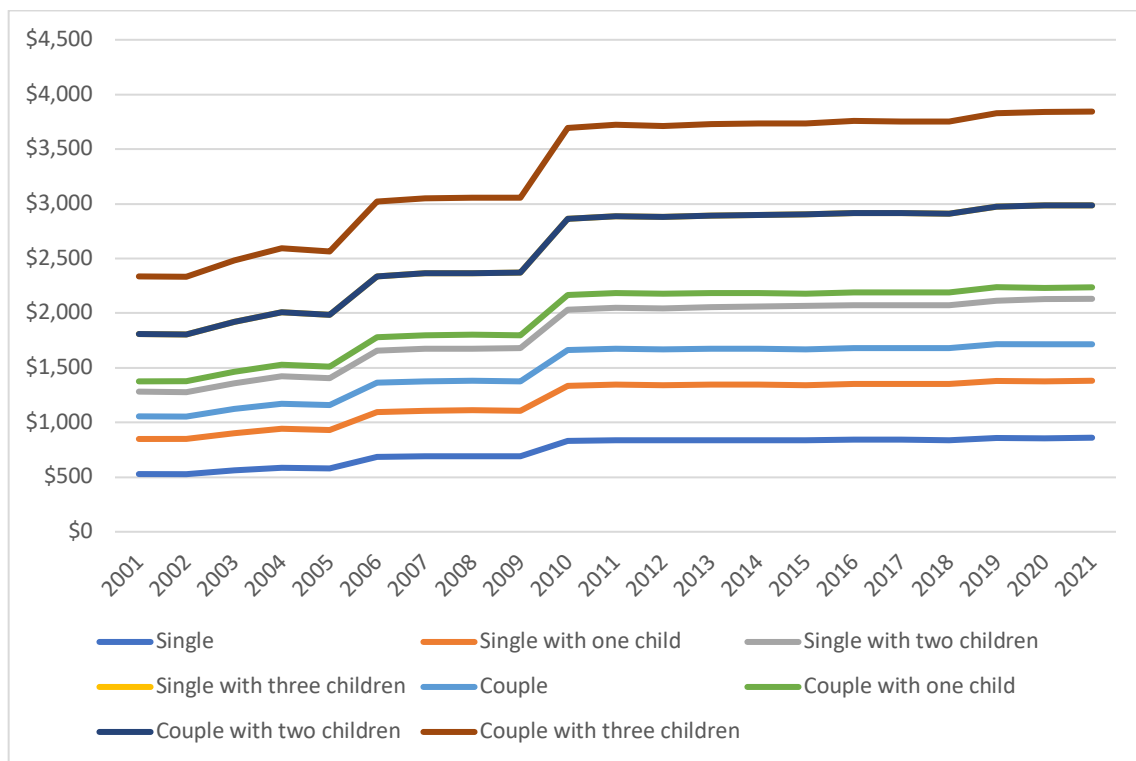
⁵⁵ Ibid.

⁵⁶ Ibid.

only use the dinner share of the per diem rate. The final per diem rate we calculate is a weighted average of standard and nonstandard rates based on the percentage of the U.S. population that lives in each of those categories. We then use the United States Department of Agriculture (USDA)'s June monthly reports for the Low-Cost plan to estimate the ratio of a child's meal cost to that of an adult since the Per Diem cost allocations are intended for adults. For the four-year old in our designated family types, we take the ratio of the meal cost of the 4-5-year-old to an average of the adult male and adult female meal cost. For the eight-year-old, we take a ratio of the 6-8-year-old to the adult cost. For the twelve-year-old, we allocate an adult meal cost.

LISEP's allocation allows households to eat out once every two weeks as a midpoint between an infrequent monthly meal and a frequent weekly meal (which is what most Americans do per Gallup). The reason a weekly frequency was not adopted is to take a conservative approach regarding spending above the absolute bare necessities.

Figure 2: Twice-a-month allocation to eating out by family size



Source: LISEP's Calculations based on Per Diem data. (n.d.). U.S. General Services Administration. <https://www.gsa.gov/travel/plan-book/per-diem-rates>.

II. Watching television

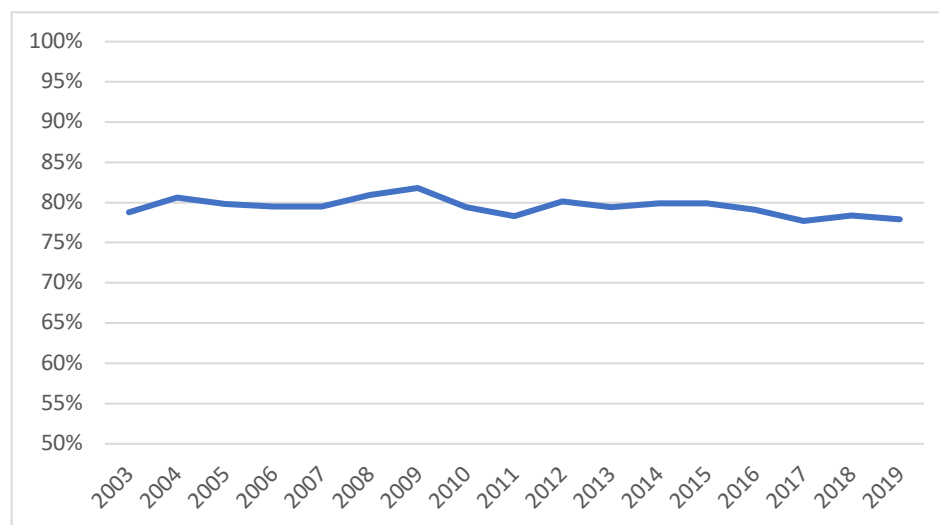
A. Rationale

The American Time Use Survey (ATUS) offers consistent evidence that TV has been widely popular among American adults for the past two decades.⁵⁷ Figure 3 shows the average percentage

⁵⁷ American Time Use Survey Home Page. (n.d.). Bureau of Labor Statistics. <https://www.bls.gov/tus/#tables>.

of American adults who watch TV daily, an unwavering 80% with very slight fluctuations since 2003. Among those who watch TV, Figure 4 shows that the duration of watching TV per day on average has remained almost the same since 2003, always hovering around 3.5 hours a day.⁵⁸⁵⁹ For this reason, we consider it reasonable to track the cost of having TV services in one's home since it's a very popular, relaxing recreational activity that Americans engage in during their leisure time. Watching TV in moderation can provide a mechanism for people to destress and disconnect from their everyday lives. Media including TV can also help with mental recovery.⁶⁰ People often come together to watch shows and movies, and watching TV is not only a way to experience popular culture but can also help stimulate social connectedness and shared social worlds with one's family and friends.⁶¹

Figure 3: Percent of American adults who regularly watch TV



Source: *American Time Use Survey Home Page*. (n.d.). Bureau of Labor Statistics. <https://www.bls.gov/tus/#tables>.

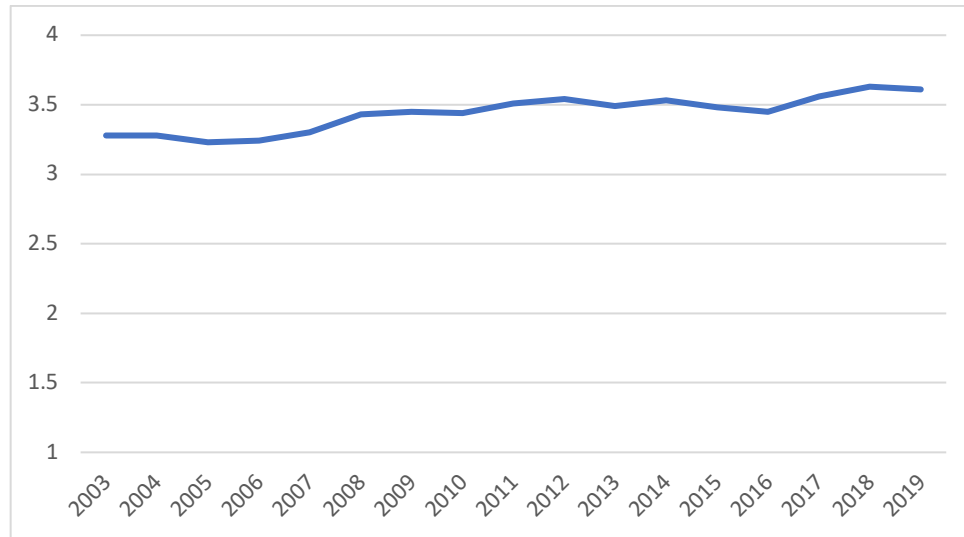
⁵⁸ The Bureau of Labor Statistics (BLS) started collecting data for the ATUS in 2003. Thus, data for 2001 and 2002 are unavailable. Source: *American Time Use Survey User's Guide: Understanding ATUS 2003 to 2020*. (2021, November). Bureau of Labor Statistics. <https://www.bls.gov/tus/atususersguide.pdf>, p.6.

⁵⁹ Annual estimates for 2020 are unavailable due to interruptions in the ATUS data collection in the beginning of the COVID-19 pandemic. Source: *American Time Use Survey*. (n.d.). Bureau of Labor Statistics. Retrieved February 1, 2022, from <https://www.bls.gov/tus/>.

⁶⁰Reinecke, L., & Eden, A. (2017). *Media use and recreation: Media-induced recovery as a link between media exposure and well-being*. In L. Reinecke & M.B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 106-117). New York: Routledge.

⁶¹ Gomillion, S., Gabriel, S., Kawakami, K., & Young, A. F. (2017). Let's stay home and watch TV: The benefits of shared media use for close relationships. *Journal of Social and Personal Relationships*, 34(6), 855-874.

Figure 4: Hours spent watching TV daily for American adults who reported watching TV regularly



Source: *American Time Use Survey Home Page*. (n.d.). Bureau of Labor Statistics. <https://www.bls.gov/tus/#tables>.

B. Pricing

We track the price of a subscription to a multichannel video programming distributor (MPDV). Even though 44% of Americans have “cut the cord” according to Pew research,⁶² the majority of American households still subscribe to some version of multichannel television. The cable TV share of the MPDV has been steadily declining, but it has been since replaced by direct broadcast satellite (DBS) and telephone TV (AT&T U-verse, Verizon FiOS, etc.).⁶³ Figure 5 shows that through 2015, pay TV has maintained popularity, but cable companies lost significant market share.⁶⁴ For the years following 2015, the market research company eMarketer found that subscribers to pay TV (cable, satellite, telephone) have declined, but as of 2020, 70% of TV households still use MPDV subscriptions (Figure 6).⁶⁵ For pricing, we used the average monthly prices for expanded basic service reported by the Federal Communications Commission (FCC), which is the authoritative source on price fluctuations in all communication technologies.⁶⁶ Extended basic service offers ample choice of channels that suits different ages and interests. For

⁶² Rainie, L. (2021b, March 17). *Cable and satellite TV use has dropped dramatically in the U.S. since 2015*. Pew Research Center. Retrieved February 9, 2022, from <https://www.pewresearch.org/fact-tank/2021/03/17/cable-and-satellite-tv-use-has-dropped-dramatically-in-the-u-s-since-2015/>.

⁶³ *Video Competition Reports*. (n.d.). Federal Communications Commission. <https://www.fcc.gov/reports-research/reports/video-competition-reports>.

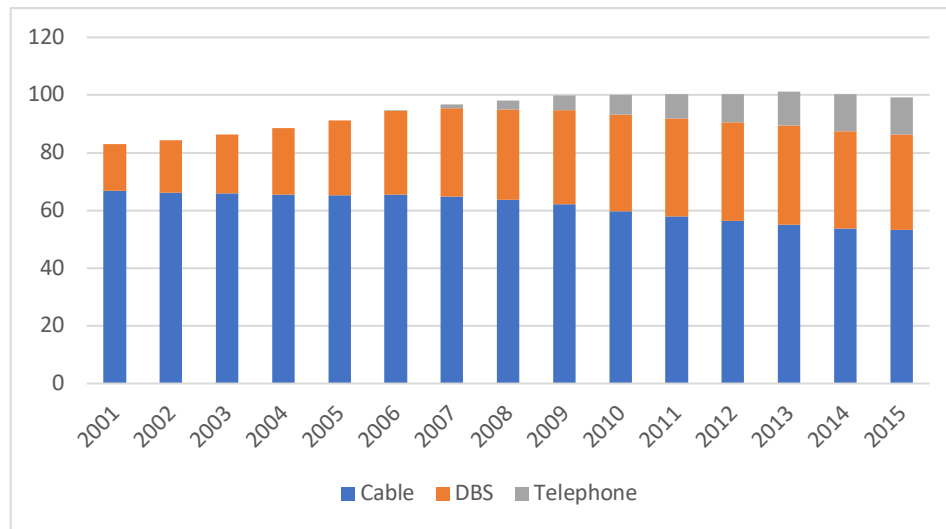
⁶⁴ The reason the data ends at 2015 is because that last report on video competition was issued by the FCC in 2017 titled “18th Annual Video Competition Report.” Credible data isn’t available for 2016-2020 on the MPDV market breakdown.

⁶⁵ He, A. (2019, August 8). *More Consumers Will Continue to Drop Pay TV Because of Price Hikes*. eMarketer. Retrieved February 9, 2022, from <https://www.emarketer.com/content/more-consumers-will-continue-to-drop-pay-tv-because-of-price-hikes>.

⁶⁶ *Cable Industry Prices Reports*. (n.d.). Federal Communications Commission. <https://www.fcc.gov/reports-research/reports/cable-industry-prices-reports>.

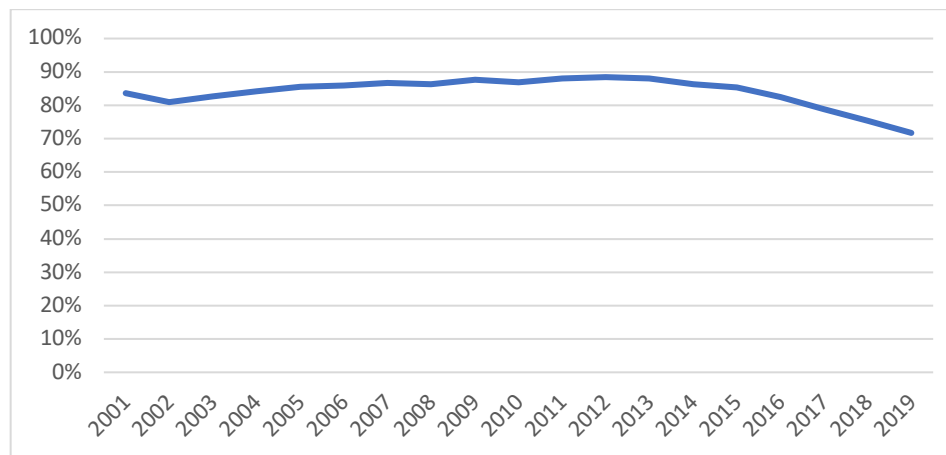
example, the Disney Channel, offered through extended basic service, caters to children, while basic TV packages do not offer children’s entertainment channels.⁶⁷ Starting in 2006, we averaged the costs of cable and satellite subscriptions, given that the latter has gained significant market share (since 2006, a third of households in the U.S. subscribed to satellite service). Figure 7 shows the changes in cable prices over time.

Figure 5: Number of Pay TV Subscribers (millions)



Source: *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*. (n.d.) Federal Communications Commission. <https://www.fcc.gov/documents>

Figure 6: Percent of U.S. TV households who subscribe to pay TV



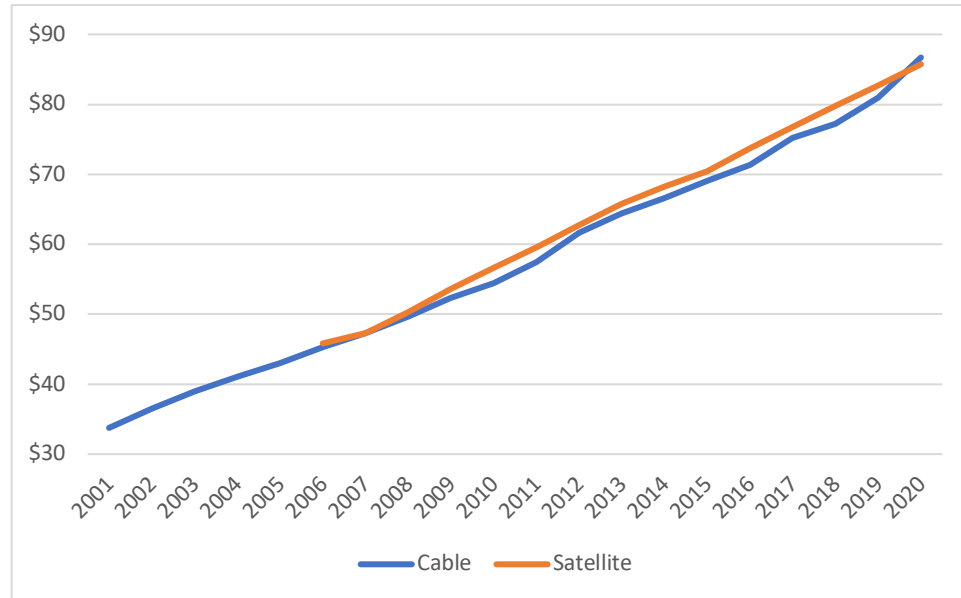
Sources:

1. *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*. (n.d.) Federal Communications Commission. <https://www.fcc.gov/documents>

⁶⁷ *What is Basic Cable?* (n.d.). Dish.Com. Retrieved January 21, 2022, from <https://www.dish.com/programming/packages/what-is-basic-cable/>.

2. *US Pay TV vs. Non-Pay-TV Households, 2016–2024 (millions)*. (2020, September 1). eMarketer. Retrieved June 14, 2022, from <https://www.emarketer.com/chart/239301/us-pay-tv-vs-non-pay-tv-households-2016-2024-millions>

Figure 7: Average Price of Extended Basic Service TV



Source: *Cable Industry Price Reports*. (n.d.). Federal Communications Commission. <https://www.fcc.gov/reports-research/reports/cable-industry-prices-reports>.

III. Subscription Video on Demand (SVOD) services

a. Rationale

We recognize that the declining admissions per capita at the movies explains a mounting trend of abandoning the cinema experience for a more convenient at-home screening (Figure 8). This trend started as early as 2001 when Gallup reported that Americans are much more likely to watch movies at home than at the movie theater.⁶⁸ The poll reported that “[m]ore than nine in 10 Americans say they own a home video player such as a VCR or DVD player, with 70% owning just a VCR, 1% owning just a DVD player, and 23% owning both.” In 2006, Pew Research reported that three-quarters of U.S. adults prefer watching movies at home than going to the theater.⁶⁹ Pew also indicated that 56% of adults cited DVD as their preferred way to watch a movie at home.⁷⁰ Given this, we do not allocate LMI families the cost of going to the movies since most families have largely abandoned this recreational experience since 2001. Additionally, we choose

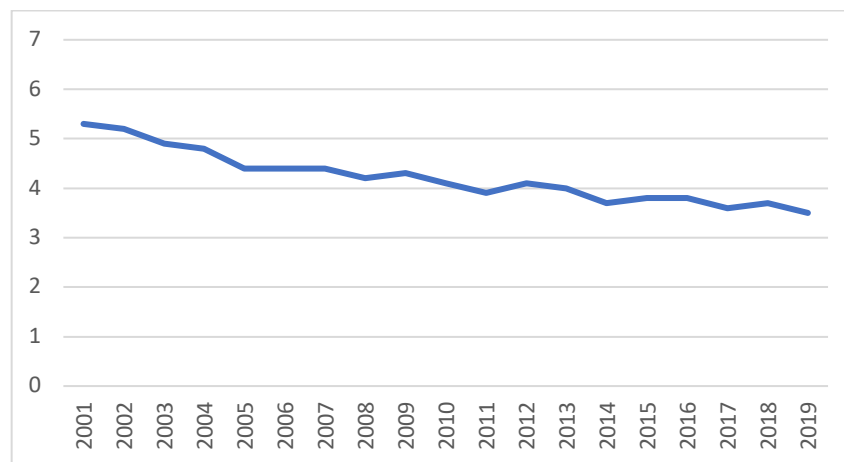
⁶⁸ Carroll, J., & Jones, J. M. (2001, March 23). *Julia Roberts Is Top Current Movie Star, While John Wayne Is All-time Favorite*. Gallup. Retrieved April 20, 2022, from <https://news.gallup.com/poll/1870/julia-roberts-top-current-movie-star-while-john-wayne-alltime-favorite.aspx>.

⁶⁹ *Increasingly, Americans Prefer Going to the Movies at Home*. (2006, May 16). Pew Research. Retrieved April 11, 2022, from <https://www.pewresearch.org/social-trends/2006/05/16/increasingly-americans-prefer-going-to-the-movies-at-home/>.

⁷⁰ Pew Research Center. (2006, May). *Home “ticket sales” dwarf theater attendance 5–1, survey shows. Increasingly, Americans Prefer Going to the Movies At Home*. Pew Research. <https://www.pewresearch.org/wp-content/uploads/sites/3/2010/10/Movies.pdf>.

not to allocate LMI families the cost of a DVD player and DVD purchases or rentals even though 81% of U.S. households owned a DVD player in 2006.⁷¹ This choice was made because expanded basic cable service offers access to an array of movies, which allow viewers to achieve an acceptable level of integration into popular culture. There are a multitude of movie offerings on basic cable in broadcast network prime time ratings. For example, between Dec. 31, 2001, and Jan. 6, 2002, ABC Saturday Night Movie, NBC Saturday Night Movie, Fox Movie Special, and CBS Sunday Movie ranked high in basic cable programming.⁷² Another proof point that movies have been available on basic cable is American Movies Classics (AMC), which has been a channel on basic cable throughout the 2000s.⁷³

Figure 8: U.S./Canada admissions per capita



Sources:

1. Motion Picture Association. (2019). *THEME Report 2019*. <https://www.motionpictures.org/wp-content/uploads/2020/03/MPA-THEME-2019.pdf>
2. Motion Picture Association. (2014). *Theatrical Market Statistics 2013*. https://www.motionpictures.org/wp-content/uploads/2014/03/MPAA-Theatrical-Market-Statistics-2013_032514-v2.pdf
3. Motion Picture Association. (2004). *US Entertainment Industry: 2004 MPA Market Statistics*. https://www.immagic.com/eLibrary/ARCHIVES/GENERAL/MPAA_US/M050309M.pdf

More recently, the influx of streaming services and its relative affordability has led us to consider a subscription to at least one Subscription Video on Demand (SVOD) service as a minimal recreational need given the preference of most American adults to watch movies and other programming at home. This preference is prevailing and consistent over time; for example, a survey reported that 70% of adults prefer watching movies at home, even if theaters were to reopen following the pandemic.⁷⁴ To decide the year in which to effectuate this shift, we evaluated survey

⁷¹ Survey: DVD players overtake VCRs in popularity. (2006, December 26). CNN Money. Retrieved April 11, 2022, from https://money.cnn.com/2006/12/26/technology/dvd_vcr/.

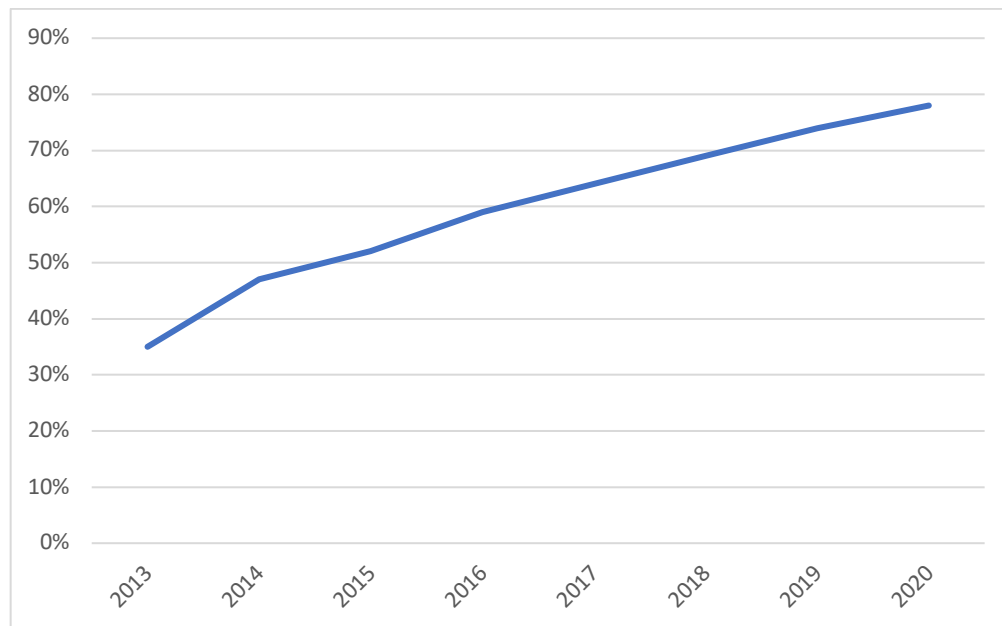
⁷² Ray, K. (2002, January 14). BroadcastWatch. *Broadcasting & Cable*, 132(2). Retrieved April 20, 2022, from <https://worldradiohistory.com/Archive-BC/BC-2002/BC-2002-01-14.pdf>.

⁷³ Wikipedia contributors. (n.d.-a). *AMC (TV channel)*. Wikipedia. Retrieved April 20, 2022, from [https://en.wikipedia.org/wiki/AMC_\(TV_channel\)](https://en.wikipedia.org/wiki/AMC_(TV_channel)).

⁷⁴ Pesce, N. L. (2020, May 21). *70% of people would rather watch movies at home, even if theaters reopen: survey*. MarketWatch. Retrieved April 11, 2022, from <https://www.marketwatch.com/story/70-of-people-would-rather-watch-movies-at-home-even-if-theaters-reopen-survey-2020-05-21>.

data from Leichtman Research, a widely quoted media research group.⁷⁵ Figure 9 shows its finding on the percentage of U.S. households subscribing to at least one SVOD service. This percentage surpassed 30% in 2013, which we take as the year to introduce an SVOD subscription into the recreational bundle. However, since SVOD penetration is gradual and many households remain reliant on cable/satellite for TV service, we don't phase out cable/satellite from the bundle entirely. Instead, we construct an average weighted price that takes into account the percentage of households still exclusively subscribed to cable/satellite and the percentage of households that have at least one SVOD service. For example, in 2013, the first year in which we introduced a SVOD subscription into the bundle, we multiply the average SVOD subscription cost by 0.35, which is the percent of households that adopted at least one SVOD service, and add the average subscription cost to a multichannel TV (cable or satellite), which we multiplied by 0.65 i.e., the number of households that didn't subscribe to SVOD (1-0.35).

Figure 9: Number of households with at least one SVOD service



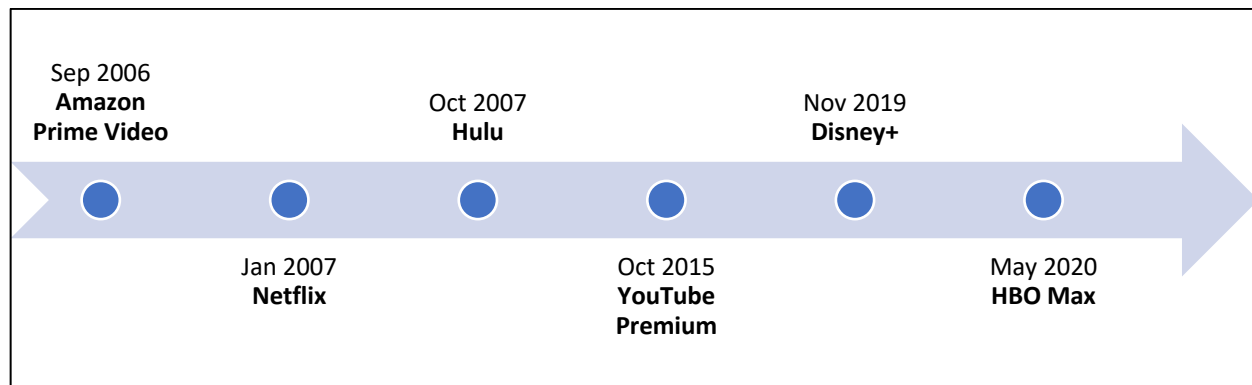
Source: 78% of U.S. Households Have an SVOD Service. (2020, August 28). Leichtman Research Group. Retrieved June 14, 2022, from <https://www.leichtmanresearch.com/78-of-u-s-households-have-an-svod-service/>.

Our goal is to give LMI families the choice between at least two streaming services, considering the difference in movie offerings between the different services. To determine a choice of two services, we consider three criteria: 1) continuous presence in the market for a considerable time, 2) popularity among U.S. households and 3) affordability. Firstly, the two streaming services need to have existed at least since 2015. Thus, looking at a timeline of the founding dates of the most popular streaming services (Figure 10), we see that that Netflix and Amazon Prime Video were the first to enter the SVOD market.⁷⁶

⁷⁵ 78% of U.S. Households Have an SVOD Service. (2020, August 28). Leichtman Research Group. Retrieved June 14, 2022, from <https://www.leichtmanresearch.com/78-of-u-s-households-have-an-svod-service/>.

⁷⁶ Wikipedia contributors. (n.d.). *List of streaming media services*. Wikipedia. Retrieved April 11, 2022, from https://en.wikipedia.org/wiki/List_of_streaming_media_services.

Figure 10. SVOD Market Entry



Source: Wikipedia contributors. (n.d.). *List of streaming media services*. Wikipedia. Retrieved June 14, 2022, from https://en.wikipedia.org/wiki/List_of_streaming_media_services.

Secondly, the most popular streaming services by subscriptions are also Netflix and Amazon Prime Video (Figure 11). Figure 12 shows that by 2020, Netflix had around 74 million paid memberships in the U.S. and Canada.⁷⁷ As of December 2020, 142 million consumers subscribed to Amazon Prime (Figure 13).⁷⁸⁷⁹ But Amazon Prime is first and foremost a delivery service, so one might question how many subscribers use the service for streaming movies. According to a Morning Consult poll, of the 54% of adults who subscribe to Amazon Prime, 22% use the streaming service every day, 32% use it several times a week, and 16% use it once a week.⁸⁰ That is, 70% of Prime subscribers use the streaming service at least once a week. Thus, we assume that an Amazon Prime subscription in the majority of cases implies a frequent usage of the video streaming service. Both Netflix and Amazon Prime are popular across the board, with a recent survey showing that these two services were the most subscribed to by Baby Boomers, Generation X, Millennials, and Generation Z.⁸¹ Thirdly, regarding affordability, an Amazon Prime or Netflix subscription is very much cheaper than the cost of going to the movies since the average price of one movie ticket

⁷⁷ Statista. (2022, January 21). *Number of Netflix paid streaming subscribers in the U.S. and Canada Q1 2013- Q4 2021*. Retrieved April 11, 2022, from <https://www.statista.com/statistics/250937/quarterly-number-of-netflix-streaming-subscribers-in-the-us/>.

⁷⁸ Garcia, T. (2021, January 20). *Amazon Prime members in the U.S. reaches 142M, more shoppers choose annual option: CIRP*. MarketWatch. Retrieved April 11, 2022, from <https://www.marketwatch.com/story/amazon-prime-member-total-reaches-142-million-in-u-s-with-more-shoppers-opting-in-for-a-full-year-data-shows-11611073132>.

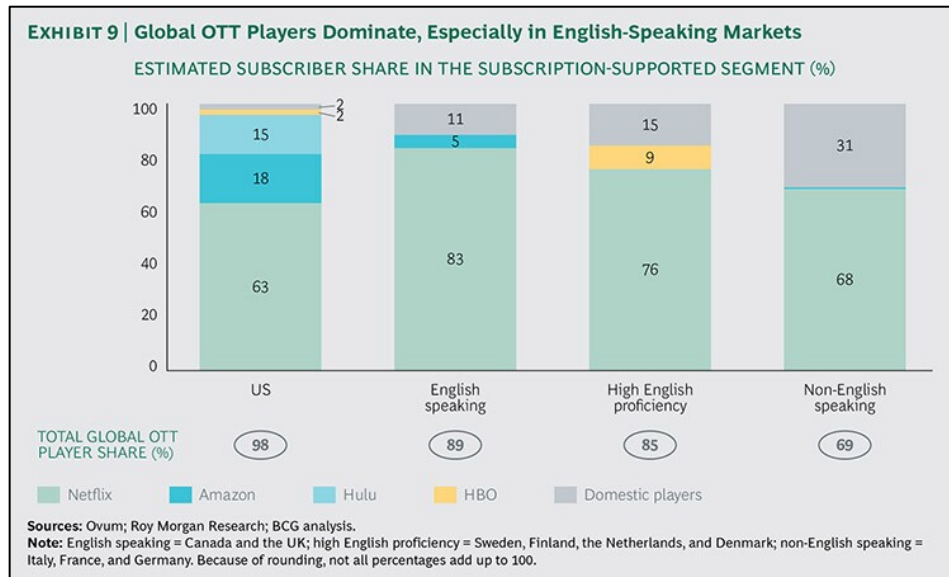
⁷⁹ Davis, D. (2021, November 3). *Most Amazon shoppers have eyes only for Amazon*. Digital Commerce 360. Retrieved April 11, 2022, from <https://www.digitalcommerce360.com/article/amazon-prime-membership/>.

⁸⁰ Morning Consult. (2021, May). *National Tracking Poll #210591*. https://assets.morningconsult.com/wp-uploads/2021/06/16171008/210591_crosstabs_MC_ENTERTAINMENT_AVOD_STREAMING_Adults_v1_NP.pdf.

⁸¹ Hepburn, T. (2022, January 12). *Survey: Amazon Prime Video is the Most Popular Streaming Service Across all Generations*. Cord Cutters News. Retrieved April 11, 2022, from <https://www.cordcuttersnews.com/survey-amazon-prime-video-is-the-most-popular-streaming-service-across-all-generations/>.

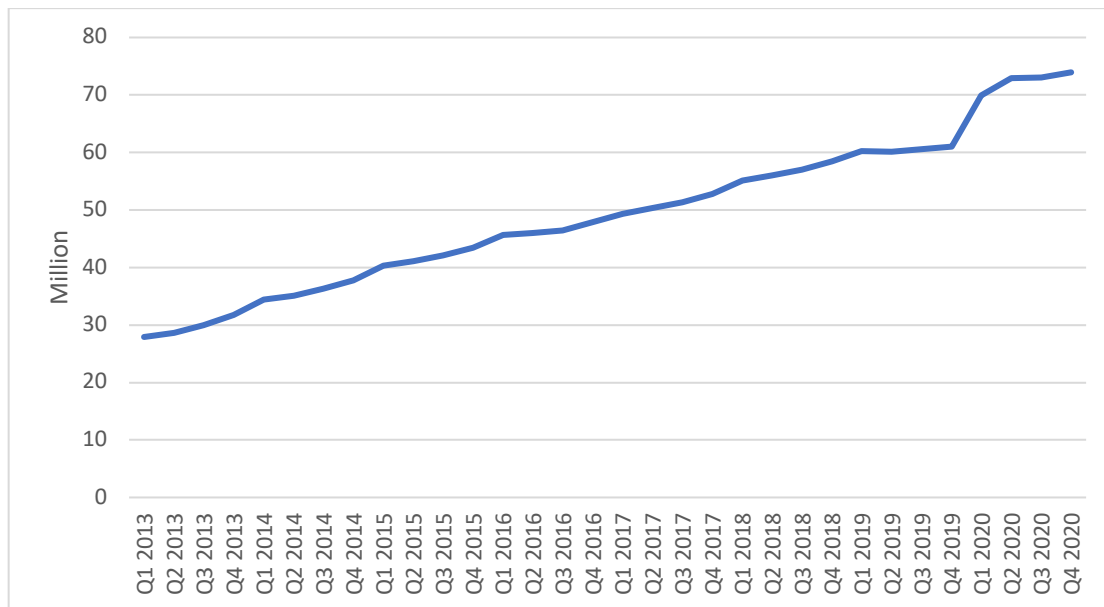
stood somewhere between \$8 and \$9 in the period 2015-2020 (one trip to the movies would cost \$8-9 multiplied by the number of the family's members).

Figure 11. SVOD Subscriber Share in English-Speaking Markets



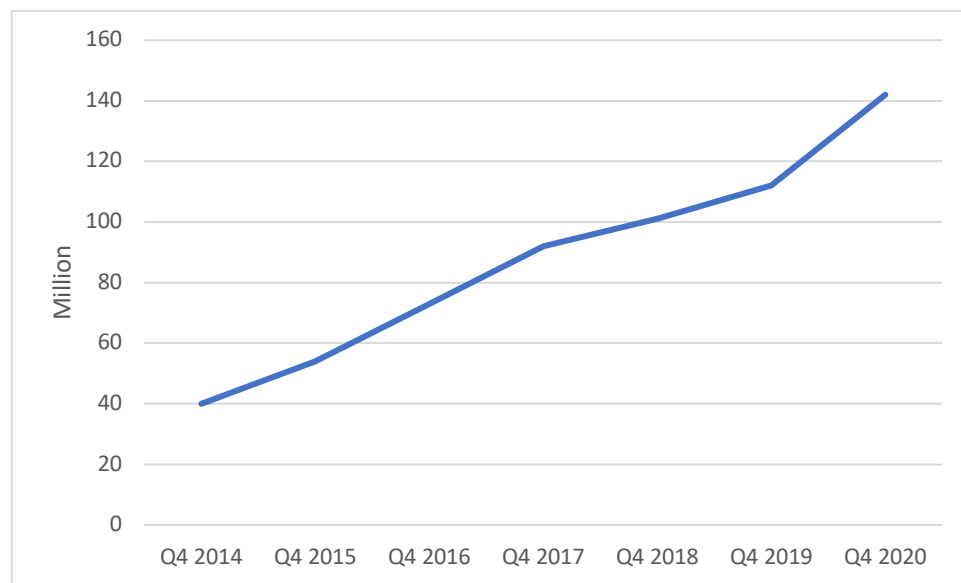
Source: Arthofer, F., Kon, M., Lee, E., Rose, J., & Hardarson, Á. (2016, September 20). *The Future of Television: The Impact of OTT on Video Production Around the World*. BCG Global. Retrieved April 12, 2022, from <https://www.bcg.com/publications/2016/media-entertainment-technology-digital-future-television-impact-ott-video-production>.

Figure 12. Number of Netflix paid streaming subscribers in the U.S. and Canada



Source: Statista. (2022, January 21). *Number of Netflix paid streaming subscribers in the U.S. and Canada Q1 2013-Q4 2021*. Retrieved April 11, 2022, from <https://www.statista.com/statistics/250937/quarterly-number-of-netflix-streaming-subscribers-in-the-us/>.

Figure 13. Number of Amazon Prime subscribers in the U.S.



Source: Davis, D. (2021, November 3). *Most Amazon shoppers have eyes only for Amazon*. Digital Commerce 360. Retrieved April 11, 2022, from <https://www.digitalcommerce360.com/article/amazon-prime-membership/>

b. Pricing

We include an average of the annual Amazon Prime subscription and the annual equivalent of Netflix monthly payments. This gives LMI families a choice to subscribe to either service, but not both. For Netflix, we use the least expensive plan, the Basic Plan, which allows for only one account. Historical price data is reported by the Verge, a technology news website operated by Vox.⁸² For the Amazon annual subscription, we use information on price changes since 2005 compiled by CNN Money.⁸³ We choose to include the annual subscription over the monthly price because it is more economical (see Table 1).

Table 1. Average SVOD prices for the period 2015-2021

Year	Netflix (Basic, Annualized)	Amazon Prime (Annual)	Average
2013	\$95.88	\$79	\$87.44
2014	\$95.88	\$99	\$97.44

⁸² Kastrenakes, J. (2022, January 14). *Netflix raises prices on all plans in US*. The Verge. Retrieved April 11, 2022, from <https://www.theverge.com/2022/1/14/22884263/netflix-price-increases-2021-us-canada-all-plans-hd-4k>.

⁸³ Yurieff, K. (2018, April 28). *Amazon Prime: A timeline of the membership service*. CNNMoney. Retrieved April 11, 2022, from <https://money.cnn.com/2018/04/28/technology/amazon-prime-timeline/index.html>.

2015	\$95.88	\$99	\$97.44
2016	\$95.88	\$99	\$97.44
2017	\$95.88	\$99	\$97.44
2018	\$95.88	\$119	\$107.44
2019	\$107.88	\$119	\$113.44
2020	\$107.88	\$119	\$113.44
2021	\$107.88	\$119	\$113.44

Source: Yurieff, K. (2018, April 28). *Amazon Prime: A timeline of the membership service*. CNNMoney. Retrieved April 11, 2022, from <https://money.cnn.com/2018/04/28/technology/amazon-prime-timeline/index.html>.

IV. Physical activity for adults

A. Rationale

Since we are concerned with defining a “minimal” level of recreation, it is important to create a budget that allows adults and children in LMI families to be physically active without gym memberships. We consulted a variety of sources focused on outdoor recreation and sport participation. In this section, we focus on outdoor recreation, which can provide individuals with a host of benefits including physical activity, time in nature, and time away from the stress of everyday life.⁸⁴ To assess outdoor recreation participation, we examined the Outdoor Participation Reports issued by the Outdoor Foundation annually, which track trends in outdoor recreation. We identified four activities that account for a significant portion of the outdoor recreation in which Americans take part, namely running or jogging, hiking, fishing, and biking (see Figure 14).⁸⁵ Although the participation rates are for all Americans aged six and older, adults (25-years-old and older) have consistently indicated a preference for these activities (highest participation rates and participation frequencies).⁸⁶⁸⁷⁸⁸⁸⁹ Amongst these four, we allow LMI adults the choice between running/hiking and biking. We selected these activities because they are among the most popular outdoor recreation activities in the U.S., and they are activities that require only minimal equipment and limited recurring costs (fishing is more equipment-intensive). Based on this, we allow LMI households equipment needed for running/jogging, hiking, or biking. We do this by constructing a weighted average of prices given the activity’s popularity among Americans. We allocate this equipment to adults only because we consider children’s participation in school sports and free park play a sufficient opportunity for physical activity.

B. Pricing

i) Equipment prices

⁸⁴ Godbey, G. (2009). Outdoor recreation, health, and wellness: Understanding and enhancing the relationship. Resources for the Future. <https://media.rff.org/documents/RFF-DP-09-21.pdf>.

⁸⁵ 2020 Outdoor Participation Report. (2020, December). Outdoor Foundation. <https://outdoorindustry.org/resource/2020-outdoor-participation-report/>.

⁸⁶ The Outdoor Foundation. (2017). *Outdoor Recreation Participation Topline Report 2017*. https://outdoorindustry.org/wp-content/uploads/2017/04/2017-Topline-Report_FINAL.pdf.

⁸⁷ The Outdoor Foundation. (2016). *Outdoor Recreation Participation Topline Report 2016*. <https://outdoorindustry.org/wp-content/uploads/2017/05/2016-Topline-Report.pdf>.

⁸⁸ The Outdoor Foundation. (2015). *Outdoor Recreation Participation Topline Report 2015*. <https://arrowcreek411.files.wordpress.com/2015/06/researchparticipation2015topline.pdf>.

⁸⁹ The Outdoor Foundation. (2014). *Outdoor Recreation Participation Topline Report 2014*. <https://industry.traveloregon.com/wp-content/uploads/2015/07/OutdoorRecParticipationReport2014.pdf>.

To determine the cost of equipment needed to practice these outdoor activities, we used data from the National Sporting Goods Association (NSGA).⁹⁰ For running/jogging and hiking, we allocate each member of the family athletic sneakers. For biking, we allocate the cost of bicycles and helmets. The cost of bicycles was recorded in the survey starting in 2012, so to obtain prices for prior years, we adjust the 2012 price back using the Consumer Price Index (CPI) for Sports vehicles including bicycles. Figure 15 details the change of these equipment prices over time.

ii) Depreciation

There is no definite lifespan for a bicycle, as that depends on the model, usage, maintenance frequency, etc. However, generally speaking, a “high-milage” bicycle is one that has around 10,000 miles.⁹¹ This means if a person rides a bike for one hour a week for 10 miles, which is the miles per hour that is assumed for most Google Maps routes and for beginner bikers,^{92,93} they put 520 miles on the bike every year. This means an average bike’s lifespan is 20 years. We thus allocate every adult in the LMI family a new bike every 20 years and divide the cost by 20 to smooth it in the budget. However, for the bike to last 20 years, it requires maintenance at least once a year.⁹⁴ A bicycle could require tuning up more than once a year depending on riding conditions, but to meet the minimal criterion, we are assuming exceptional care so that it would only need an annual check-up, which we allocate LMI once a year. However, many parts require replacing in a bicycle at the 5,000-mile mark to continue to ensure safe riding, like tires, chain, cogs, etc.⁹⁵ Thus, we allocate the cost of a major tune-up every 10 years (given a riding rate of 520 miles/year). Most bike experts agree that the average minor tune up cost is between \$50 and \$90 (we take the midpoint at \$70, once every year), and a major tune up costs between \$120 and \$150 (we take the midpoint at \$135, once every five years).⁹⁶ Regarding the bike helmet, the U.S. Consumer Product Safety Commission (CPSC) states that one should replace a helmet every 5-10 years.⁹⁷ We take a conservative approach and assume that the LMI family would change their helmet once every 10 years. Again, this bike is meant for adult use and serves as an option for physical activity. Children’s physical activity is discussed below separately.

For jogging/running shoes, their lifespan is strongly correlated with frequency of usage. It is difficult to judge how often and for how long individuals run/jog or hike as it’s highly variable

⁹⁰ *Sports Research Reports*. (n.d.). National Sporting Goods Association. Retrieved February 22, 2022, from <https://www.nsga.org/research/>.

⁹¹ Bassett, E. (2021, June 14). *How Long Do Bicycles Actually Last? Two Wheels Better*. Retrieved May 2, 2022, from <https://twowheelsbetter.net/bicycle-lifespan/>.

⁹² Whitehouse, T. (n.d.). *What is a good average speed on a road bike?* Road Bike Basics. Retrieved May 9, 2022, from <https://roadbikebasics.com/average-speed-on-road-bike/>.

⁹³ Chandler, M. (2021, May 25). *How Fast Does Google Maps Assume You Bike?* Discerning Cyclist. Retrieved May 9, 2022, from <https://discerningcyclist.com/google-maps-cycling-speed/>.

⁹⁴ Hobby Biker. (n.d.). *Average Cost of a Bike Tune-Up: And What is Included*. Retrieved May 2, 2022, from <https://hobbybiker.com/average-cost-of-a-bike-tune-up/>.

⁹⁵ Bassett, E. (2021, June 14). *How Long Do Bicycles Actually Last? Two Wheels Better*. Retrieved May 2, 2022, from <https://twowheelsbetter.net/bicycle-lifespan/>.

⁹⁶ Gibbons, R. (2021, December 18). *How Much Is a Bike Tune-Up? An In-Depth Look At Pricing*. Decline Magazine. Retrieved May 2, 2022, from <https://www.declinemagazine.com/bike-maintenance/how-much-is-a-bike-tune-up/>.

⁹⁷ U.S. Consumer Product Safety Commission. (n.d.). *Which Helmet for Which Activity?* Retrieved May 2, 2022, from <https://www.cpsc.gov/safety-education/safety-guides/sports-fitness-and-recreation-bicycles/which-helmet-which-activity>.

depending on the person. Given this, we take the minimum recommended running/jogging to remain in good health. A study from the Mayo Clinic showed that running/jogging only five miles per week ensures having the full benefits of avoiding cardiovascular diseases and all-cause mortality.⁹⁸ Most experts specify an average lifetime of running/jogging shoes between 300-500 miles.⁹⁹ We take the end of this range to meet the minimal criterion and ensure that when the shoes are replaced, it's because they have become virtually unusable. Thus, assuming a 5 miles/week usage rate, the shoes would end their lifetime in two years. Based on this, we allocate LMI families the budget to replace running/jogging shoes once every two years.

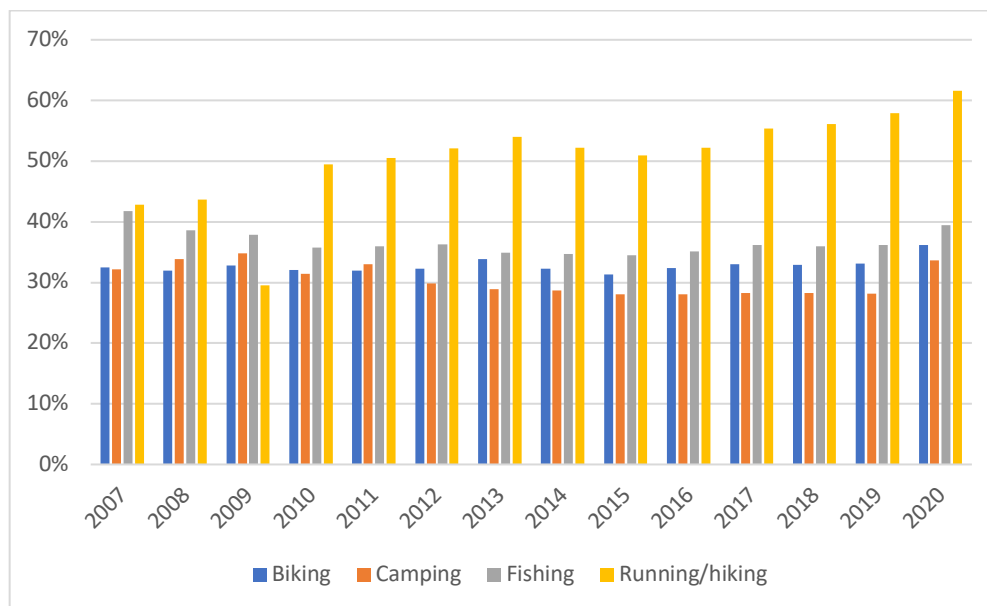
iii) Extending prices to 2001

Since the NSGA data stops in 2018, we use the CPI for different categories of goods to extend equipment prices to 2021. For bicycles, we use the CPI for sports vehicles including bicycles (which includes ELI RC013 for bicycles), for helmets, the CPI for sports equipment (which includes ELI RC021), and for running/jogging shoes, the CPI for footwear (ELIs AE011, AE021, AE022, and AE031).

iv) Note on outdoor

For athletic outdoor, since biking, running/jogging, and hiking don't require any sport-specific outdoor, we assume that members of the household will use their apparel budget detailed in the main TLC index to purchase sweatpants, t-shirts, shorts, and other sport-appropriate clothing.

Figure 14: Outdoor Participation Rates for Aged 6+

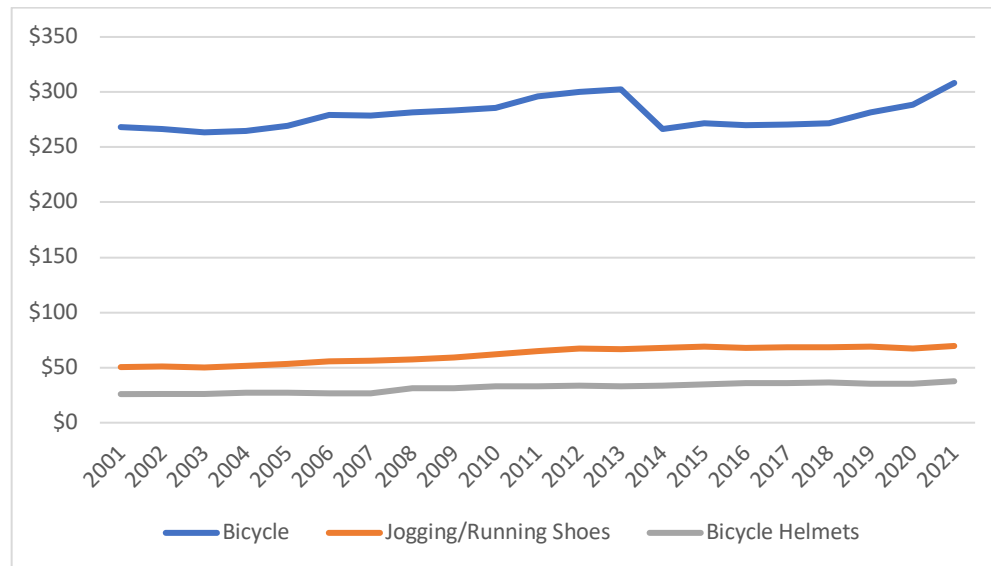


⁹⁸ Lavie, C. J., Lee, D. C., Sui, X., Arena, R., O'Keefe, J. H., Church, T. S., Milani, R. V., & Blair, S. N. (2015). Effects of Running on Chronic Diseases and Cardiovascular and All-Cause Mortality. *Mayo Clinic Proceedings*, 90(11), 1541–1552. <https://doi.org/10.1016/j.mayocp.2015.08.001>.

⁹⁹ Triola, P. (2021, June 14). *How Long Do Running Shoes Last?* Runner's World. Retrieved May 2, 2022, from <https://www.runnersworld.com/gear/a33233314/how-many-miles-do-running-shoes-last/>.

Source: *2020 Outdoor Participation Report*. (2020, December). Outdoor Foundation.
<https://outdoorindustry.org/resource/2020-outdoor-participation-report/>.

Figure 15: Running/jogging & biking equipment prices



Source: *Sporting Goods Market 2019 Edition*. (2019). National Sporting Goods Association. Retrieved June 14, 2022, from <https://www.nsga.org/research/nsga-research-offerings/sporting-goods-market-2019/>.

V. Physical activity for children

A. Rationale

Sports provide opportunities for physical health and development of social relationships across the lifespan,^{100,101} and among youth in particular, sports are an important context for positive youth development.¹⁰² Examples of sport benefits that aid personal and social development are “1) a stronger sense of self-confidence in building relationships with others and having an expanded capacity for empathy; 2) developing a better understanding of self and in so doing understanding how their actions affect others; and 3) building foundations for lifelong fitness habits.”¹⁰³ For the family types we consider, the children are 4, 8, and 12-years-old. However, most of the data we cite going forward concerns high school sports. This is because most data focus on high school sports, and there are no surveys we’ve found that focus exclusively on sports in elementary or

¹⁰⁰ Gayman, A. M., Fraser-Thomas, J., Dionigi, R. A., Horton, S., & Baker, J. (2017). Is sport good for older adults? A systematic review of psychosocial outcomes of older adults’ sport participation. *International Review of Sport and Exercise Psychology*, 10(1), 164-185.

¹⁰¹ Shores, K., Becker, C. M., Moynahan, R., Williams, R., & Cooper, N. (2015). The Relationship of Young Adults’ Health and Their Sports Participation. *Journal of Sport Behavior*, 38(3).

¹⁰² Bruner, M. W., McLaren, C. D., Sutcliffe, J. T., Gardner, L. A., Lubans, D. R., Smith, J. J., & Vella, S. A. (2021). The effect of sport-based interventions on positive youth development: A systematic review and meta-analysis. *International Review of Sport and Exercise Psychology*, 1-28.

¹⁰³ Amaro, S. (2020, January 22). *Participation in High School Athletics Has Long-lasting Benefits*. National Federation of State High School Associations. Retrieved May 6, 2022, from <https://www.nfhs.org/articles/participation-in-high-school-athletics-has-long-lasting-benefits/>.

middle school specifically, except for the Aspen Institute's Project Play reports. Thus, we use Aspen's data as well as the data focused on high school sports to guide our thinking because we reason that if certain sports rank at the top in terms of popularity in high school, then it logically follows that most children in middle schools play these same sports in preparation for high school.

Figure 16 shows that half of students participate in sports, indicating that other students participate in other extracurricular clubs. Other clubs, aside from team sports, can also be opportunities for physical activity, like dance and theater. With this in mind, the pay-to-play fee defined below can also be viewed as a fee to participate in other clubs that allows for physical activity. We focus on team sports as the main activity because the participation data and fee associated with it is available at the national level.

In addition to the health benefits of being physically active, children's participation rates have consistently confirmed that sports are a desired high school extracurricular. According to data from the Centers for Disease Control and Prevention (CDC), more than 50% of high school students consistently have played at least one team sport since 1999 (see Figure 16).¹⁰⁴ For children aged 6-12 years, data from the Sports and Fitness Industry Association shows participation rates in team sports consistently more than 50% since 2012.¹⁰⁵ To choose the school sports that children are most likely to play, we look at participation rates from the High School Participation Survey conducted by the National Federation of State High School Associations (NFHS). Figures 17 and 18 show the number of high school students playing the top four most popular sports for boys and girls, respectively. The most popular sports for boys have remained the same since 2001 (football, basketball, track and field, and baseball) while for girls, softball was replaced by soccer in 2010 as the fourth most popular sport. To make sure these findings are applicable to 6–12-year-old children like the ones we consider in our family types, we look at the Aspen Institute's findings, which state that the top four preferred team sports for this age group are baseball, basketball, football (flag and tackle football combined), and soccer. We exclude bicycling, which is popular for this age group but is not a team sport (cycling can be a team sport for professionals). Thus, in our bundle, we give children the choice between the sports most played in high school by creating a weighted average (by participation rate and sex) of sports equipment to represent both girl and boy sports preferences.

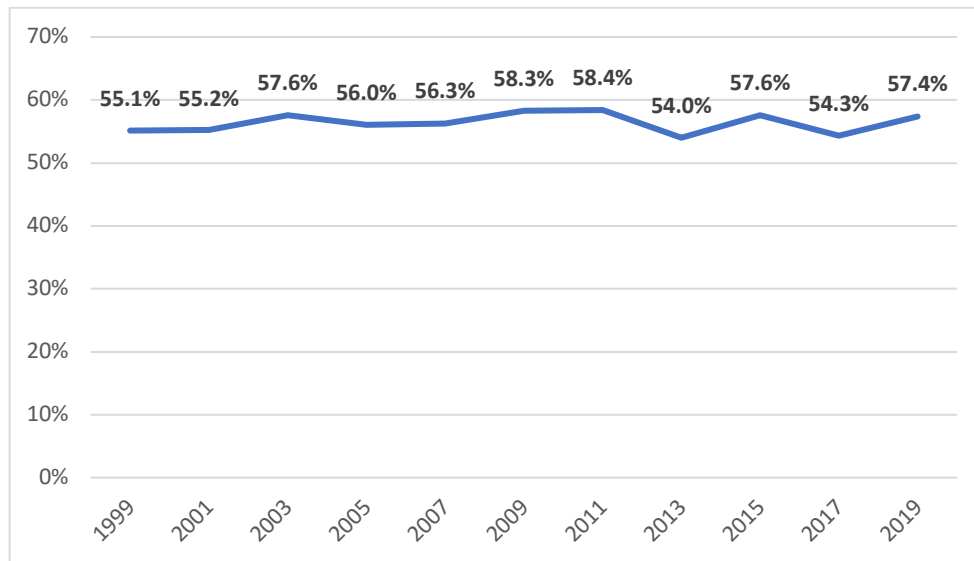
Even though this data is collected for high school students, we assume it's a minimal adequate need for children to participate in sports both in middle and high school. There is also a practical consideration given that the pay-to-play model has been prevalent in schools for these age groups and the nationally representative data samples families with children aged 12-17. For the family types with children in elementary school and younger, we determine that play in local playgrounds, state parks, and in school is sufficient opportunity for physical activity. For family types with children aged 8 and 12, we allocate the cost of school sport participation fees and equipment costs. We allocate a sports budget for an eight-year-old based on the recommendation of a medically

¹⁰⁴ Centers for Disease Control and Prevention (CDC). (n.d.). *1991-2019 High School Youth Risk Behavior Survey Data*. Retrieved May 6, 2022, from <https://yrbs-explorer.services.cdc.gov/#/graphs?questionCode=H82&topicCode=C06&location=XX&year=2019>.

¹⁰⁵ The Aspen Institute Project Play. (2020). *Youth Sports Facts: Participation Rates*. Retrieved May 9, 2022, from <https://www.aspenprojectplay.org/youth-sports/facts/participation-rates>.

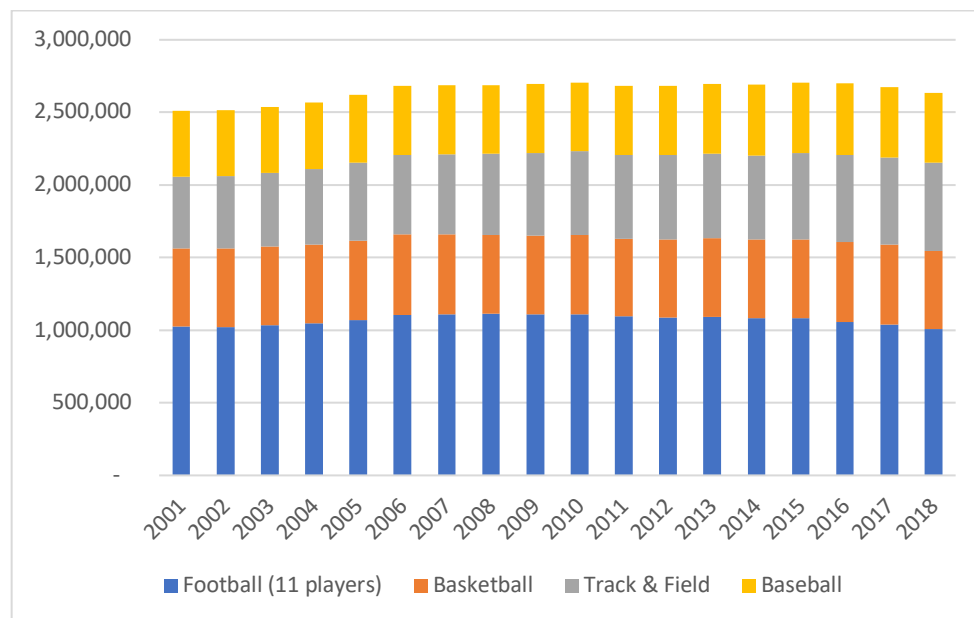
verified family wellness resource.¹⁰⁶ The effect of these age-related assumptions regarding sport participation on the families' budget cancel out over the long-term because all children will grow up and enter middle and high school at some point.

Figure 16: High School Students Who Played On At Least One Sports Team



Source: *High School Students Who Played On At Least One Sports Team*. (2019). Centers for Disease Control and Prevention. Retrieved June 14, 2022, from <https://yrbs-explorer.services.cdc.gov/#/graphs?questionCode=H82&topicCode=C06&location=XX&year=2019>.

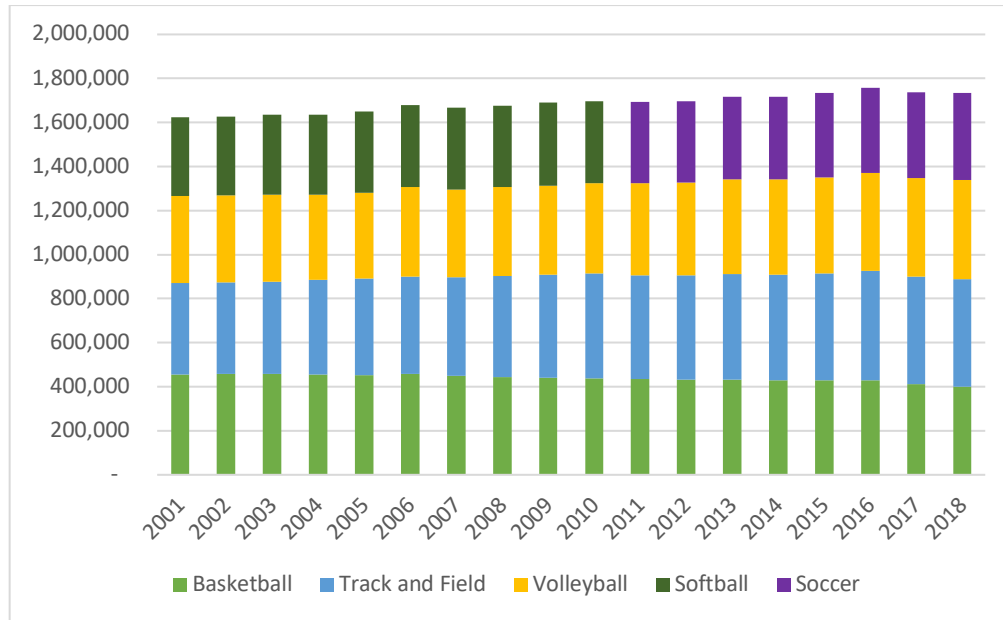
Figure 17: Top Four Boy High School Sports



¹⁰⁶ Holecko, C. (2020, December 3). *Is Your Child Ready to Play a Competitive Sport?* Verywell Family. Retrieved June 15, 2022, from <https://www.verywellfamily.com/when-should-kids-start-competitive-sports-1257040>.

Source: *High School Participation Survey Archive*. (n.d.). National Federation of State High School Associations. Retrieved June 14, 2022, from <https://www.nfhs.org/sports-resource-content/high-school-participation-survey-archive/>.

Figure 18: Top Four Girl High School Sports



Source: *High School Participation Survey Archive*. (n.d.). National Federation of State High School Associations. Retrieved June 14, 2022, from <https://www.nfhs.org/sports-resource-content/high-school-participation-survey-archive/>.

B. Pricing

i. Participation fees

To estimate the cost of sports participation fees for children in middle and high school, we use average estimates from the C.S. Mott Children's Hospital National Poll on Children's Health from the University of Michigan Health.¹⁰⁷ The questions concerning participation fees were asked for

¹⁰⁷ *National Poll on Children's Health: Poll Reports*. (n.d.). C.S. Mott Children's Hospital. Retrieved May 3, 2022, from <https://mottpoll.org/reports>.

the school years 2011-12,¹⁰⁸ 2013-14,¹⁰⁹ 2015-16,¹¹⁰ and 2018-19.¹¹¹ To extend the 2011-12 price point back to 2001 and the 2018-19 price point to 2020, we use the CPI for fees for lessons or instructions. For the missing years in between known price points, we perform linear interpolation to estimate prices for those years. The cost estimates shown below in Figure 19 are per child per sport. To ensure that our allocation is minimal, we allocate each child the cost of participating in one sport at school.

ii. Equipment

We allocate children the footwear appropriate for the sport they choose to play. We consider this to be a minimal adequate need because the American Academy of Orthopedic Surgeons makes clear that “if you participate in a single sport more than two times a week, you should purchase a shoe specifically designed for that sport” because this will prevent foot and ankle injuries.¹¹² For football, baseball, and softball, we assume that equipment (bats, helmets, etc.) is provided by the schools free of charge.¹¹³¹¹⁴

For the remaining sports, specialized shoes are the main piece of equipment needed, which we include in the budget (see Figure 20 for prices). Every year, we create a weighted average by participation rate in the sport in that year and by sex. For example, 41% of high school boys participated in football in 2001. So, we multiply the football shoes’ cost by 0.41 to account for that participation rate and then by 0.5 to account for the fact that boys are one half of the population. We do this for all sports for boys and girls each year and then sum the resulting numbers to obtain the weighted average (see equation below). We adopt a replacement rate of one year since intensive use in school sports leads to the wearing out of shoes significantly. Regarding balls, we assume the school provides them as the ball is utilized by all the team members and no one student could be held accountable for purchasing team-wide equipment.

¹⁰⁸ C.S. Mott Children’s Hospital. (2012, May 14). *Pay-to-play sports keeping lower-income kids out of the game*. National Poll on Children’s Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-play-sports-keeping-lower-income-kids-out-game>.

¹⁰⁹ C.S. Mott Children’s Hospital. (2015, January 20). *Pay-to-play sports keeping some kids on the sidelines*. National Poll on Children’s Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-play-sports-keeping-some-kids-sidelines>.

¹¹⁰ C.S. Mott Children’s Hospital. (2016, October 17). *Pay-to-participate limiting school activities for lower-income students*. National Poll on Children’s Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-participate-limiting-school-activities-lower-income-students>.

¹¹¹ C.S. Mott Children’s Hospital. (2019, March 18). *Pay-to-participate: Impact on school activities*. National Poll on Children’s Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports/pay-participate-impact-school-activities>.

¹¹² The American Academy of Orthopaedic Surgeons. (n.d.). *Athletic Shoes*. OrthoInfo. Retrieved May 5, 2022, from <https://orthoinfo.aaos.org/en/staying-healthy/athletic-shoes/>.

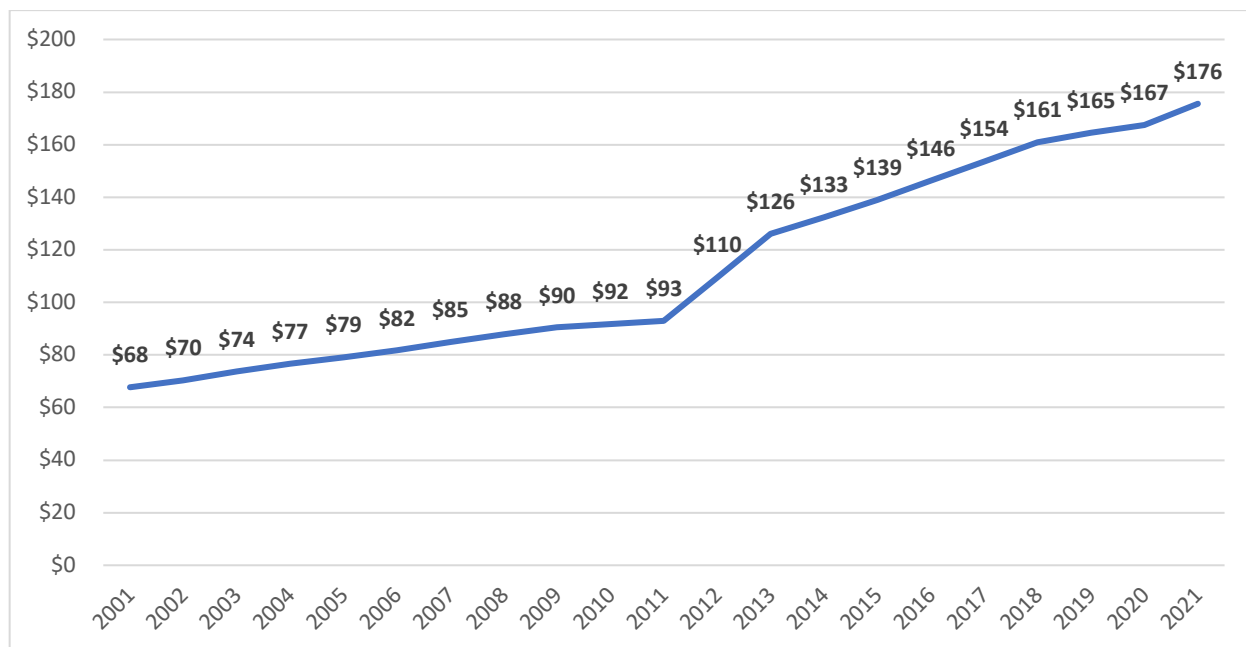
¹¹³ Daschel, N. (2012, August 29). *Football: Equipment issues as much a part of a high school coaches’ life as Xs and Os*. The Oregonian. Retrieved May 9, 2022, from <https://www.oregonlive.com/highschoolsports/article/football-equipment-issues-as-much-a-part-of-a-high-school-coaches-life-as-xs-and-os/>.

¹¹⁴ Taylor, K. (2016b, August 17). *The cost of the game*. The Gadsden Times. Retrieved May 9, 2022, from <https://eu.gadsdentimes.com/story/sports/high-school/football/2016/08/17/cost-of-high-school-football-dollars-must-be-stretched-to-train-equip-feed-teams/25620194007/>.

$$\text{Weighted average of spending on footwear} = \sum_{i=1}^{n \text{ sports}} \text{price of shoes}_i \times \text{participation rate}_{ij} \times 0.5$$

Where i is one of the sports shown in Figures 17 and 18 and j is the sex (boys or girls).

Figure 19: Average Sport Participation Fees for Middle & High School Students

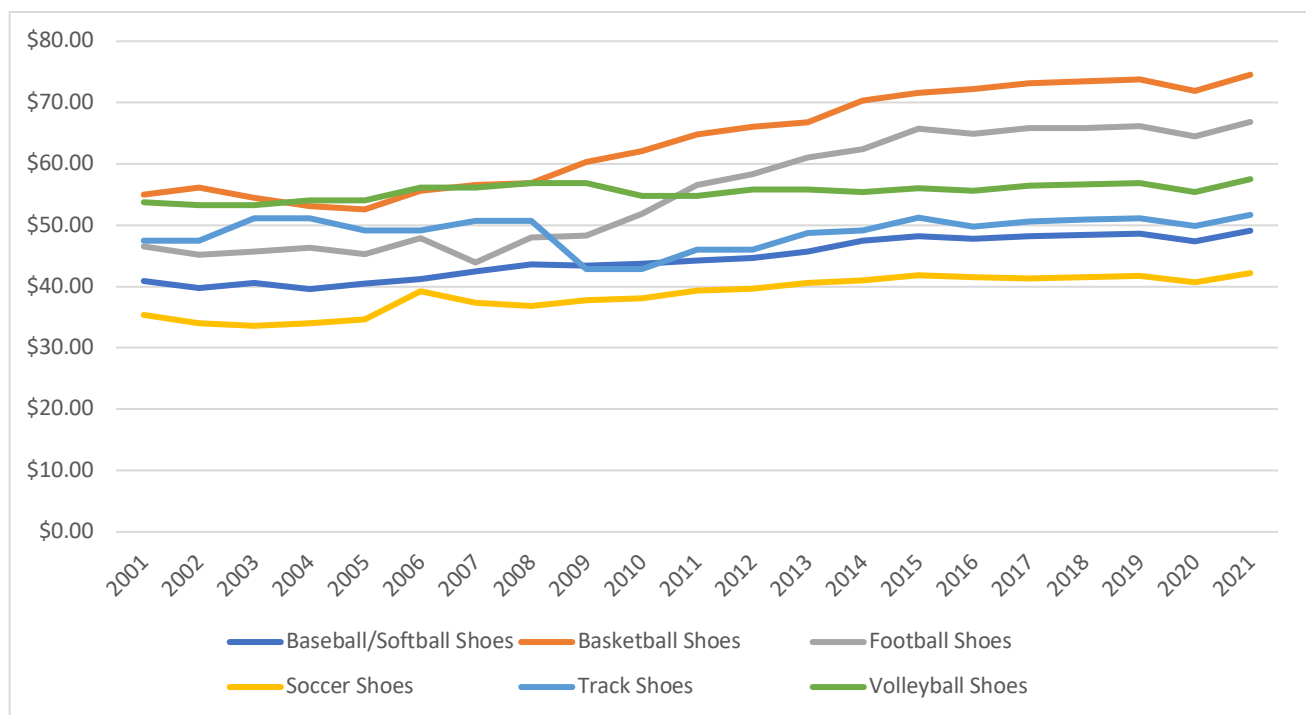


Sources:

1. C.S. Mott Children's Hospital. (2012, May 14). *Pay-to-play sports keeping lower-income kids out of the game*. National Poll on Children's Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-play-sports-keeping-lower-income-kids-out-game>.
2. C.S. Mott Children's Hospital. (2015, January 20). *Pay-to-play sports keeping some kids on the sidelines*. National Poll on Children's Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-play-sports-keeping-some-kids-sidelines>.
3. C.S. Mott Children's Hospital. (2016, October 17). *Pay-to-participate limiting school activities for lower-income students*. National Poll on Children's Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports-surveys/pay-participate-limiting-school-activities-lower-income-students>.

4. C.S. Mott Children's Hospital. (2019, March 18). *Pay-to-participate: Impact on school activities*. National Poll on Children's Health. Retrieved May 3, 2022, from <https://mottpoll.org/reports/pay-participate-impact-school-activities>.

Figure 20: Sport footwear prices



Source: *Sporting Goods Market 2019 Edition*. (2019). National Sporting Goods Association. Retrieved June 14, 2022, from <https://www.nsga.org/research/nsga-research-offerings/sporting-goods-market-2019/>.

VI. Spectator sports

A. Rationale

Attending sports games is a popular activity. For example, 68.5 million fans attended Major League Baseball games in 2019 while the number of Americans attending Minor League Baseball was close to 50 million.¹¹⁵ According to a 2019 poll by Morning Consult, only one third of American adults said that they do not follow any of the professional leagues, while 33% said they follow the NFL, 16% said they follow the MLB, 10% said they follow the National Basketball Association, and 5% said they follow the National Hockey League.¹¹⁶ Additionally, organizations like “Study in US” used to assist foreign students in their transition to the US highlight the important of sports and entertainment in the United States. A Study in the US article on the subject states “Sports and entertainment are two very important parts of culture in the United States, and many Americans consider them to be a regular part of their lives.”¹¹⁷ We determine that a “minimal” recreational experience regarding spectator sports is the attendance of a minor league baseball game.

We choose a minor league game for several reasons. The first is that a crucial aspect to spectator sports for Americans is the family and community atmosphere that the game creates. Minor league baseball, with hometown feeling, fan involvement, and nightly specials, involves all of these. This point is made extensively throughout the book *Minor League Baseball: Community Building Through Hometown Sports*.¹¹⁸ Moreover, minor league baseball is much more accessible geographically than professional sports, with over 200 teams across the nation,¹¹⁹ and much more accessible financially than major league baseball, with ticket prices being a fraction of the price of the major leagues. In 2019, for example, average tickets would cost a family of four about \$132 just to get in the door of a major league game.¹²⁰ But \$69.60 would get you parking, four tickets, four hot dogs, and four drinks at the average minor league game.¹²¹

B. Pricing

We use the average ticket prices published each year in the survey conducted by Minor League Baseball. This survey takes the average costs across A, AA, and AAA minor league teams for attending a game that year. It also takes the cost of four hot dogs, four drinks and parking. In our “minimal bundle,” we include only the ticket prices. It’s not possible to unbundle the parking cost from the “family of four” price, so we assume free parking at the venue or negligible parking fees. Ticket prices are shown in Figure 21. For the years where prices were not publicly available, we performed linear interpolation between two known price points to estimate prices for the missing

¹¹⁵ Love, J. (2019, October 22). *How Popular Is Baseball, Really?* The New York Times. Retrieved January 23, 2022, from <https://www.nytimes.com/interactive/2019/10/22/sports/baseball/baseball-popularity-world-series.html>.

¹¹⁶ *National Tracking Poll #190752*. (2019, July). Morning Consult. https://morningconsult.com/wp-content/uploads/2019/08/190752_crosstabs_EPL_Adults_v3_STACKED_JB.pdf.

¹¹⁷ *Athletics and Entertainment*. (2015, January 23). Study in US. Retrieved April 11, 2022, from <https://studying-in-us.org/athletics-and-entertainment/>.

¹¹⁸ Hoffman, F., F., Kraus, R. S., & Manning, M. J. (2003). (2003). *Minor League Baseball: Community Building Through Hometown Sports*. Routledge. <https://doi.org/10.4324/9780203049198>.

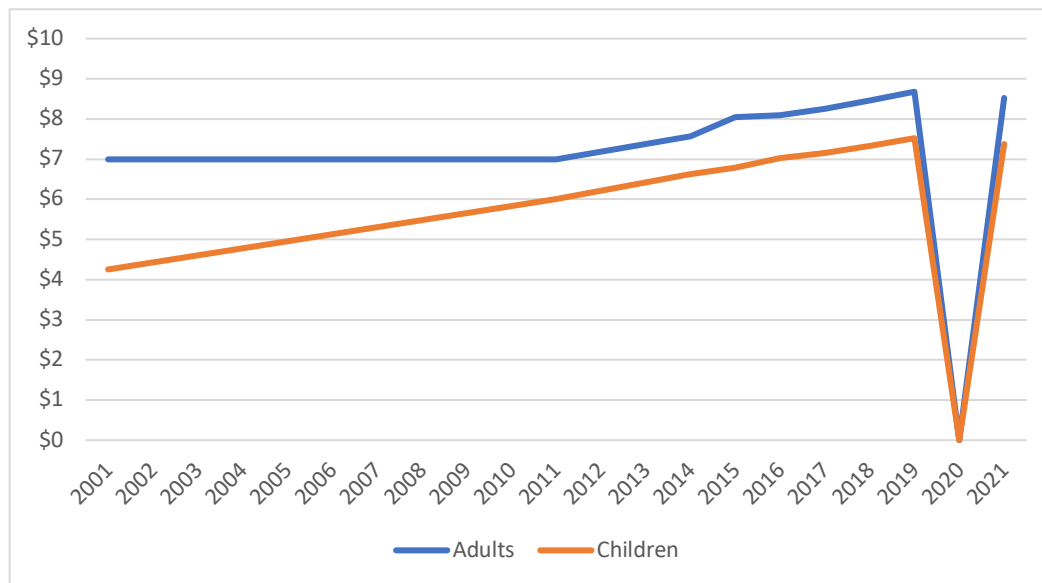
¹¹⁹ Ibid.

¹²⁰ Hartweg, C. (2019, March 20). *2019 MLB Fan Cost Index Inches Up 1.8%*. Team Marketing Report. Retrieved June 10, 2022, from <https://teammarketing.com/fci/2019-mlb-fan-cost-index-inches-up-1-8/>.

¹²¹ The Editors. (2020, February 21). *Take me out to the (minor league) ballgame*. America Magazine. Retrieved June 10, 2022, from <https://www.americamagazine.org/politics-society/2020/02/21/take-me-out-minor-league-ballgame>.

years. We exclude this activity from the bundle in 2020 due to the cancellation of most sporting events during the COVID-19 pandemic.

Figure 21: Average Cost of Minor League Baseball Tickets



Sources:

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2. Cwik, C. (2018, March 6). *A family of four can attend a minor-league baseball game for about \$66.* Yahoo News. Retrieved June 15, 2022, from <https://www.yahoo.com/news/family-four-can-attend-minor-league-baseball-game-66-210451175.html>.
3. *Minor League Baseball remains a budget-friendly entertainment option.* (2016, July 7). Minor League Baseball. Retrieved June 15, 2022, from <https://www.milb.com/news/gcs-188526688>.
4. Schilling, P. (2018, June 22). *Why Minor League Baseball is so Appealing to Fans.* Samford University. Retrieved June 15, 2022, from <https://www.samford.edu/sports-analytics/fans/2018/Why-Minor-League-Baseball-is-so-Appealing-to-Fans>.

5. Reichard, K. (2014, June 5). *Average cost for family of four at MiLB game: \$63.55*. Ballpark Digest. Retrieved June 15, 2022, from <https://ballparkdigest.com/201406057357/minor-league-baseball/news/average-cost-for-family-of-four-at-milb-game-6355>.
6. Smith, M. (2013, May 16). *Peanuts, Cracker Jack and Big Bucks*. Albuquerque Journal. Retrieved June 15, 2022, from <https://www.abqjournal.com/239583/balancing-cost-value.html>.
7. Smith, C. (2012, June 12). *How billionaires like Warren Buffett profit from minor-league baseball ownership*. Yahoo Sports. Retrieved June 15, 2022, from <https://sports.yahoo.com/news/how-billionaires-like-warren-buffett-profit-from-minor-league-baseball-ownership.html>.
8. *Average Cost For Family Of Four Under \$60 For MiLB Game*. (2011, April 15). Minor League Baseball. Retrieved June 15, 2022, from <https://www.milb.com/news/gcs-17807326>.
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10. Katz, B., & Teller, M. (2008, August 6). *Minor Leagues, Major Profits*. Forbes. Retrieved June 15, 2022, from https://www.forbes.com/2008/08/06/baseball-minors-sacramento-biz-sports-cz_mo_0806minors.html?sh=6db3b1273e01.
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VII. Trip

A. Summer Road Trip

a. Rationale

One of the most popular ways Americans prefer to take time off is by going on a road trip, so much so that has become a “cultural rite of passage for American families.”¹²²¹²³ Given the popularity of travel both during summer when school is not in session and around the winter holidays, in our bundle, we give LMI families the option between the two vacations. We argue that it’s a minimal need for families to take at least one three-day vacation every year.

b. Pricing

When pricing a summer road trip, the main elements one must consider are the cost of gas, overnight stays, and food.¹²⁴ The National Household Travel Survey, 2001-2002 conducted by the Bureau of Transportation Statistics (BTS) found that the average summer road trip was 284 miles one way, with a summer road trip defined as trips that “are more than 50 miles from home to the furthest destination (...) [and] begin the Thursday before Memorial Day and end the Wednesday after Labor Day.”¹²⁵ Based on this, we consider a long-distance summer trip to be 568 miles round

¹²² Ryerson, L. (2020, April 16). *10 ways road trips have changed over the years — and they’re all for the better*. Insider. Retrieved April 21, 2022, from <https://www.insider.com/road-trips-then-now-2018-5>.

¹²³ Firshein, S. (2020, September 4). *To Many Travelers, 2020 Was the Summer of 1965*. The New York Times. Retrieved April 25, 2022, from <https://www.nytimes.com/2020/09/04/travel/to-many-travelers-2020-was-the-summer-of-1965.html>.

¹²⁴ Klurman, M. (2021, August 11). *How to Budget for a Road Trip*. Reader’s Digest. Retrieved April 25, 2022, from <https://www.rd.com/article/road-trip-cost/>.

¹²⁵ Bureau of Transportation Statistics. (n.d.). *National Household Travel Survey Summer Travel Quick Facts*. Retrieved April 25, 2022, from <https://www.bts.gov/statistical-products/surveys/national-household-travel-survey-summer-travel-quick-facts>.

trip. We allocate three days to this trip to match the winter holidays trip because we consider the two trips equivalent. Assuming a 60 MPH speed limit, which is the most common on rural and urban interstate highways,¹²⁶ we consider that the driver will drive 4.5 hours a day which is the number of hours recommended for driving before taking a break.¹²⁷ At this rate, the driver is assumed to finish most of the trip within two days and to drive only 28 miles on the last day. We thus allocate the family a two-night stay at a hotel.

To determine the price of a hotel stay and meals, we use the per diem rates issued by the GSA. While these rates are not explicitly for vacation purposes, they provide robust estimates of the cost of lodging and meals in most locations in the continental U.S. The lodging per diem rate is based on the hotel average daily rate (ADR), which is a widely used metric in the hotel industry calculated by dividing room revenue by the number of rooms rented.¹²⁸ The reason the per diem lodging estimate is a better fit for our purposes than the raw ADR is because it accounts for a “mid-range” quality of hotels, thereby excluding any upscale or luxury lodging options and meeting the “minimal” criteria we have set.¹²⁹ We allocate families the cost of a two-night, one-room hotel stay no matter the family size. We calculate a weighted average of the standard and nonstandard rate that reflects the population distribution in these areas. To be conservative in our estimates, we assume that families with two or three children will make sleeping space in the same room for the children. Since hotel rates tend to spike during the summer due to an uptick in demand, we adjust the per diem lodging cost to reflect this. Since the GSA monthly per diem rates are only published for specific areas, national monthly per diem rates aren’t available. Instead, we use the ADR of U.S. hotels to determine the ratio of prices in the summer compared to the rest of the year. We find that summer prices are 2% higher than the annual average. Thus, we multiply the per diem lodging rates by 1.02 to reflect this. We estimate that this is a good approximation since the per diem lodging rate is based on the ADR but focuses on affordable hotels. Further, we allocate each member of the family, both adults and children, the weighted average per diem cost of food (which includes the three meals) for three days. See Figure 22 and 23 for lodging and food prices.

For the gas cost, we assume a gas consumption of 19 gallons based on a 30 MPG rate,¹³⁰ which we multiply by the average of gas prices during the months of June, July, and August¹³¹ to obtain the cost of gas for the summer trip (Figure 24). Since most road trips consist of interstate driving,

¹²⁶ *Speed: Maximum posted speed limits by state*. (2022, April). Insurance Institute for Highway Safety. Retrieved April 25, 2022, from <https://www.iihs.org/topics/speed/speed-limit-laws>.

¹²⁷ *How Far Can You Drive Safely In A Day? (With Advice On Breaks)*. (2021, November 10). The Road Trip Expert. Retrieved April 25, 2022, from <https://www.theroadtripexpert.com/how-far-can-you-drive-safely-in-a-day/>.

¹²⁸ U.S. General Services Administration. (n.d.). *Factors Influencing Lodging Rates*. Retrieved April 28, 2022, from <https://www.gsa.gov/travel/plan-book/per-diem-rates/factors-influencing-lodging-rates>.

¹²⁹ Ibid.

¹³⁰ *Fuel Economy of 2016 Honda Accord*. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from <https://www.fueleconomy.gov/feg/PowerSearch.do?action=noform&path=7&year=2016&make=Honda&model=Accord&srchtyp=ymm>.

Fuel Economy of 2006 Honda Accord. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from https://www.fueleconomy.gov/feg/bymodel/2006_Honda_Accord.shtml.

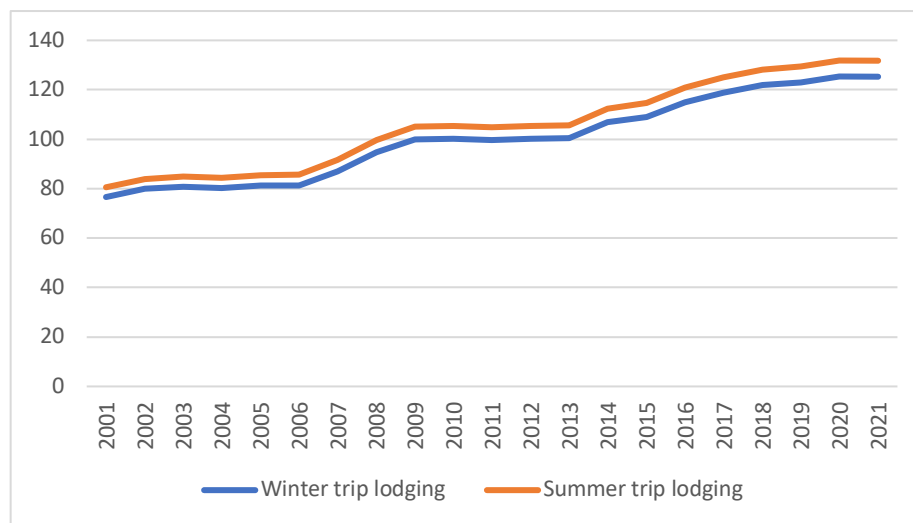
Fuel Economy of 1996 Honda Accord. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from https://www.fueleconomy.gov/feg/bymodel/1996_Honda_Accord.shtml

¹³¹ *US Regular All Formulations Gas Price*. (n.d.). FRED Economic Data. Retrieved January 24, 2022, from <https://fred.stlouisfed.org/series/GASREGW>.

we account for an “average” cost of tolls on interstate highways. We assume the vast interstate highway system is a good route for most if not all destinations given its expansiveness and length of 46,876 miles.¹³² Although some travel bloggers recommend back road driving rather than the interstate highways because they render the road trip richer and more interesting,¹³³ this usually entails traveling more miles to arrive at the same destination, and since time is an important factor in our minimal bundle given our assumption of full-time work and limited vacation days, we assume the LMI family will mostly drive on the interstates. For a 568-mile trip of mostly interstate driving, we estimate the average cost of tolls to be 10 cents per mile. We estimate this number by taking the average cost per vehicle-mile data across all interstate roads (not tunnels and bridges) for which the data is available from the Federal Highway Administration.¹³⁴ At this rate, the average toll cost for the road trip is \$56.8.

Finally, it might seem important to allocate some budget to activities that the family would engage in during the trip such as visiting national parks or going to museums. However, since our goal is to construct a bundle of “minimal” recreational activities, we assume that families would find free activities and venues to populate their trip schedule. And there is no shortage of such opportunities. All states have a host of free museums, festivals, gardens, beaches, etc.¹³⁵¹³⁶

Figure 22: Lodging Cost Estimates Based on Per Diem Rates



¹³² Federal Highway Administration. (2021, April 27). *Interstate Frequently Asked Questions*. U.S. Department of Transportation Federal Highway Administration. Retrieved May 3, 2022, from <https://www.fhwa.dot.gov/interstate/faq.cfm>.

¹³³ McCool Travel. (n.d.). *8 Great Reasons Take Road Trips On Smaller Roads Rather Than Highways*. Retrieved May 3, 2022, from <https://www.mccooltravel.com/8-great-reasons-take-road-trips-on-smaller-roads-rather-than-highways/>.

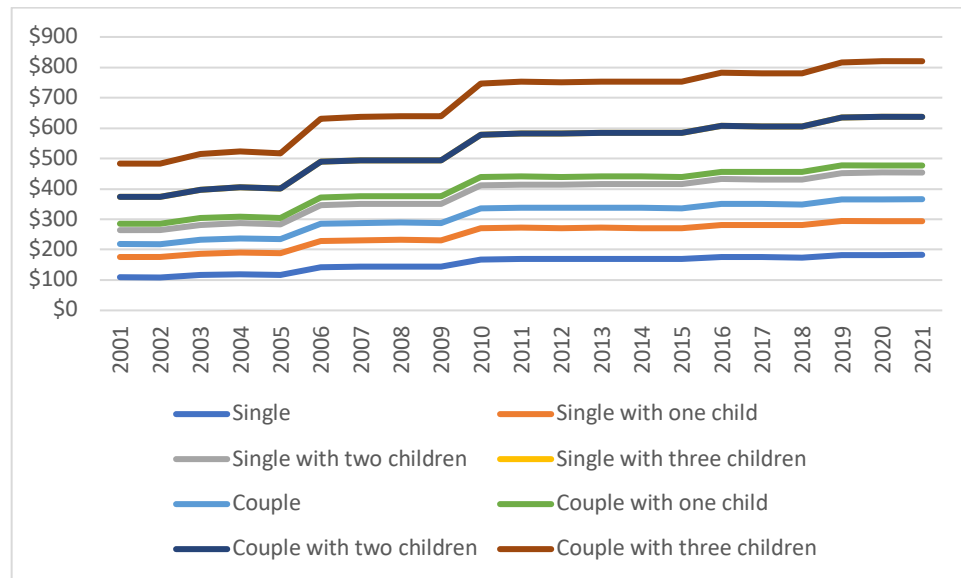
¹³⁴ Federal Highway Administration. (2018, March). *Toll Facilities in the United States*. Retrieved May 9, 2022, from <https://www.fhwa.dot.gov/policyinformation/tollpage/>.

¹³⁵ Brownfield, C. (2021, November 4). *The Best Free Tourist Attraction in Every State*. Reader's Digest. Retrieved April 28, 2022, from <https://www.rd.com/list/best-free-tourist-attraction-in-every-state/>.

¹³⁶ Teel, C. M. (2012, June 27). *America's Best Free Tourist Attractions*. SmarterTravel. Retrieved April 28, 2022, from <https://www.smartertravel.com/americas-best-free-tourist-attractions/>.

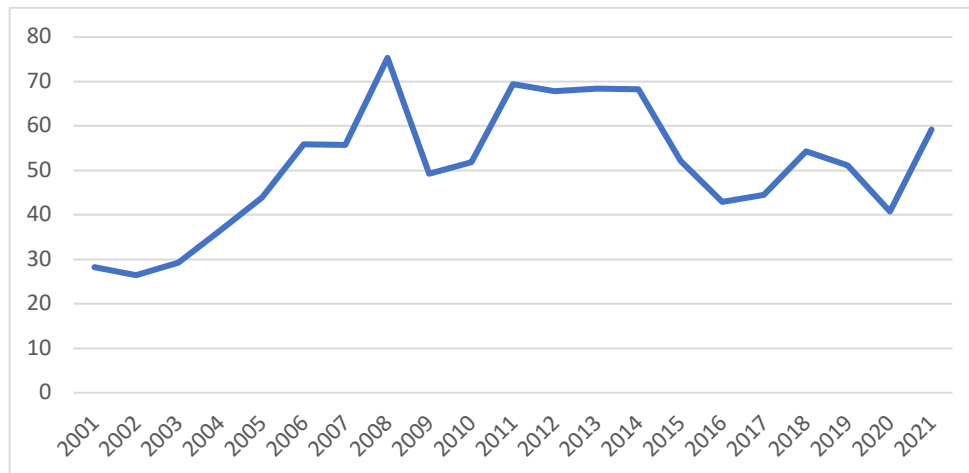
Source: U.S. General Services Administration. (n.d.). *Per Diem Files*. Retrieved April 28, 2022, from <https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-files>.

Figure 23: Food Cost Estimates Based on Per Diem Rates



Source: U.S. General Services Administration. (n.d.). *Per Diem Files*. Retrieved April 28, 2022, from <https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-files>.

Figure 24: Trip gas cost assuming 30MPG and summer average gas price



Source: Authors' calculations based on the trip length, summer average gasoline prices and the assumption of 30MPG consumption.

B. Winter Holiday Trip

a. Rationale

It is customary for Americans to travel for the holidays, at least every few years, to re-connect with friends and family, and this is especially important for individuals' social wellbeing. Thanksgiving and the winter holidays are usually the most popular travel times in the U.S. According to Holiday

Travel Forecasts by the American Automobile Association (AAA), travel over the winter holidays is significantly more common than over Thanksgiving (Figure 25). Thus, we allocate LMI families the opportunity to travel over the winter holidays (during the month of December) to visit their families, as a part of their mental and physical recovery at the end of the year. We assume that the family will travel by car as opposed to taking a plane because consistently over the years, around 90% of traveling Americans take their car to reach their destination, according to the AAA forecasts. We use the Allianz's definition of "vacation" in its widely used Vacation Confidence Index reports. A vacation is "a leisure trip of at least a week to a destination that is 100 miles or more from home."¹³⁷ Thus, we consider it to be a minimal recreational need to travel at least 100 miles one-way from home to a chosen destination. However, in the interest of estimating minimal recreation needs, we focus on a weekend trip rather than a weeklong trip, estimating a three-day trip to a destination 100 miles or more from home.

b. Pricing

To estimate the price of gas, we assume an MPG of 30 given that the most popular sedans (such as a Honda Accord) in the U.S. had an MPG of 25-26 in the city and 32-34 on the highway.¹³⁸ We then use the average gas price during the month of December of each year published by the U.S. Energy Information Administration to calculate the cost of a 200-mile round trip during the winter holidays (Figure 26).¹³⁹ We allocate families the same rate of interstate tolls (10 cents per mile) since most travel requires driving on interstate roads, which equals \$20 for a 200-mile trip. Applying the same toll rate ensures consistency with the summer trip.

For lodging, to remain consistent with the summer trip, we allocate families the weighted average of the per diem lodging cost for one hotel room for two nights. Since ADR data indicates that December prices are consistently 3% lower than the annual average, we multiply the per diem rate by 0.97 to reflect this. For food, we also allocate each member of the family the per diem food costs for three days.

Figure 25: Numbers of Americans travelling over the winter holiday

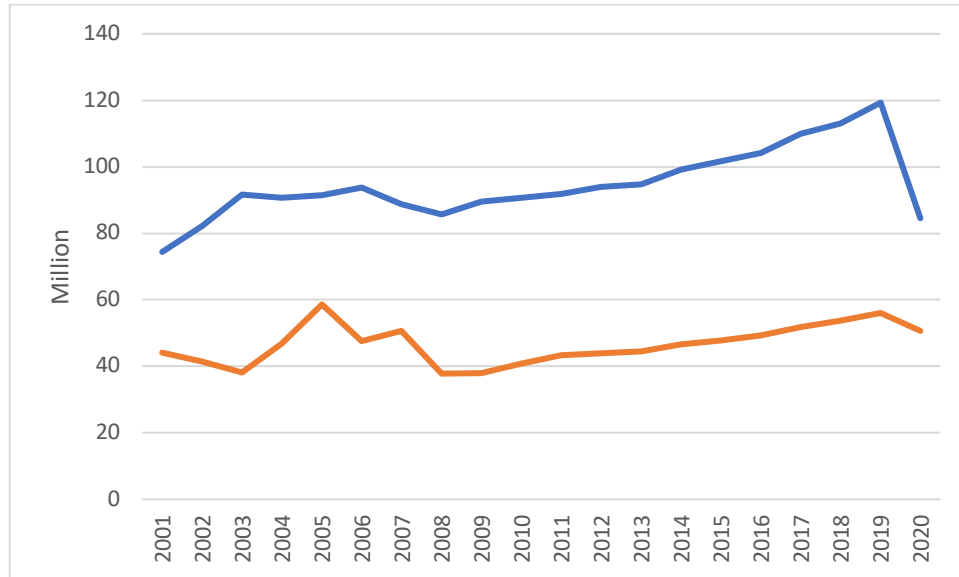
¹³⁷ *The 2019 Vacation Confidence Index: A White Paper from Allianz Global Assistance*. (2019, August). Allianz. https://www.allianzworldwidepartners.com/usa/v_1565708380589/media/vci_2019_whitepaper_aga.pdf.

¹³⁸ *Fuel Economy of 2016 Honda Accord*. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from <https://www.fueleconomy.gov/feg/PowerSearch.do?action=noform&path=7&year=2016&make=Honda&model=Accord&srctype=ymm>.

Fuel Economy of 2006 Honda Accord. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from https://www.fueleconomy.gov/feg/bymodel/2006_Honda_Accord.shtml.

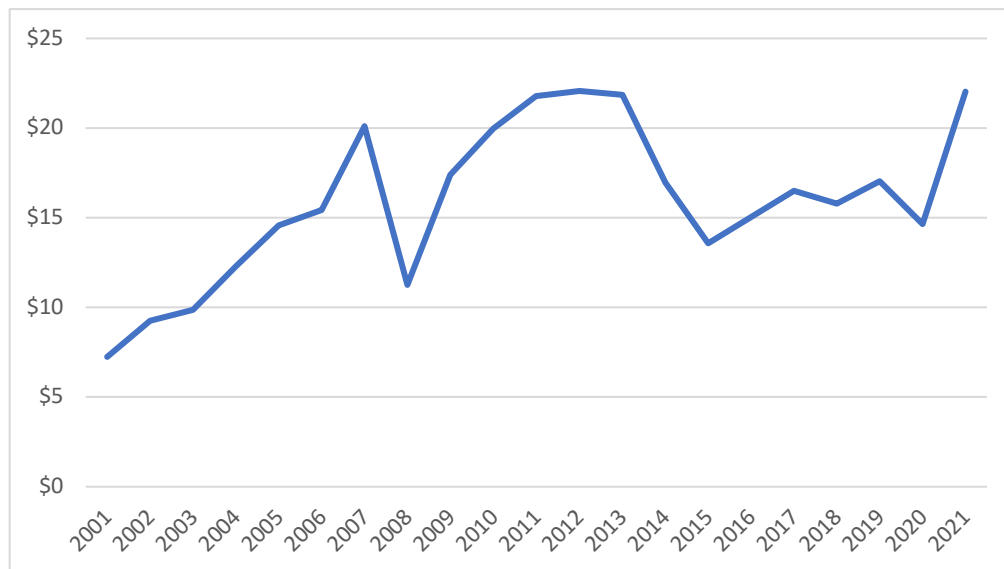
Fuel Economy of 1996 Honda Accord. (n.d.). U.S. Department of Energy: Fuel Economy. Retrieved January 24, 2022, from https://www.fueleconomy.gov/feg/bymodel/1996_Honda_Accord.shtml.

¹³⁹ *US Regular All Formulations Gas Price*. (n.d.). FRED Economic Data. Retrieved January 24, 2022, from <https://fred.stlouisfed.org/series/GASREGW>.



Source: this data was generously shared with us by Ellen Edmonds of the American Automobile Association (AAA)

Figure 26: Winter trip gas cost assuming 30MPG and December average gas price



Source: Authors' calculations based on the trip length, December average gasoline prices and the assumption of 30MPG consumption.

VIII. December Holidays (e.g., Christmas, Hannukah, Kwanza)

Buying holiday presents for one's children and the associated traditions and stories, such as Santa Claus for Christmas, are an essential part of the American holiday experience. We allocate LMI families the cost of holiday decorations, festive food, and a gift budget since giving and receiving gifts is a fundamental part of the holiday tradition. The National Retail Federation (NFR) shows

that 96-98% of Americans buy gifts for family, 91-93% buy food and candy, and 64-71% buy decorations each year consistently.¹⁴⁰ We restrict the gift budget to family members, which means we do not allocate any cost for gifts for friends and coworkers.

For the holiday budget, we estimate that it's a minimal adequate need for the children aged 4-12 in our family types to receive a toy as a Christmas present. To estimate the price of a toy, we reason that a toy accepted as a donation for the charity Toys for Tots is a conservative estimate for a toy cost.¹⁴¹ We look at two company websites that ran campaigns to raise money/gifts for Toys and Tots. They recommend a toy that costs at least between \$10 and \$20.¹⁴²¹⁴³ To be conservative, we allocate families \$10 per child in gifts. To extend this price point before 2020, we use the CPI for Toys. Additionally, for adults, Bankrate, a consumer financial services company that's best known for personal finance recommendations blog, recommends a spousal gift of \$75-\$100.¹⁴⁴ Again, to be conservative, we take the \$75 price point and extend it back to 2001 using the CPI for Recreation. We allocate a gift spending for adults even in the absence of a spouse, i.e., in the case of single parents or single individuals because it's typical for adults to incur spending during the holidays and buy desirable items, such as festive clothes.

For holiday food spending, we allocate families the cost of a Thanksgiving dinner reported by the American Farm Bureau Federation (AFBF) which we estimate is the best proxy for a festive holiday dinner.¹⁴⁵ The AFBF prices a Thanksgiving dinner for 10 individuals. To tailor this cost to the eight different family sizes, we calculate the Thanksgiving dinner cost per person (by dividing the AFBF estimate by ten) and multiply that per-person cost by the number of individuals in a given family type (for a two-parent family with one child, we multiply the per-person cost by three, etc.). Further, we allocate each family the average spending on decorations as reported by the NRF. See Figure 27 for prices over time.

Figure 27: Holiday Budget Items

¹⁴⁰ *Winter Holidays Data Center*. (n.d.). National Retail Federation. Retrieved January 24, 2022, from <https://nrf.com/topics/holiday-and-seasonal-trends/winter-holidays/winter-holidays-data-center>.

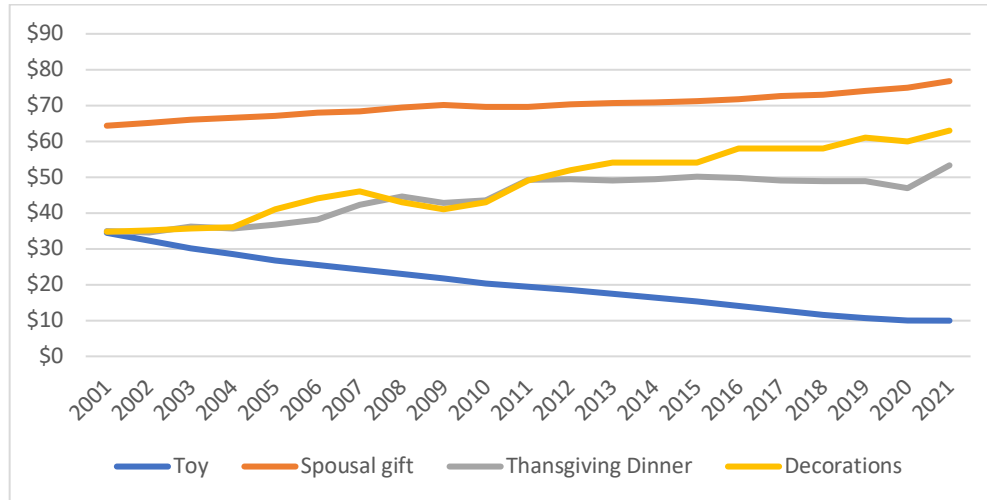
¹⁴¹ *Marine Toys for Tots*. (n.d.). Marine Toys for Tots. Retrieved June 10, 2022, from <https://www.toysfortots.org/>.

¹⁴² *Toys For Tots Gift Guidelines*. (n.d.). Murphy Insurance Agency. Retrieved June 10, 2022, from <https://www.dfmurphy.com/resources/Toys-for-Tots/Gift-Guidelines.aspx>.

¹⁴³ *Welcome to Wilde's Toys for Tots Drive!* (n.d.). Wilde Toyota. Retrieved June 10, 2022, from <https://www.wildetoyota.com/toys-for-tots/>.

¹⁴⁴ Wisniewski, M. (2019, December 3). *How Much Should You Spend On Your Holiday Gifts?* Bankrate. Retrieved June 10, 2022, from <https://www.bankrate.com/personal-finance/how-much-should-you-spend-on-holiday-gifts/>.

¹⁴⁵ *Farm Bureau Survey: Thanksgiving Dinner Cost Down 4%*. (2020, November 19). American Farm Bureau Federation. Retrieved June 10, 2022, from <https://www.fb.org/newsroom/farm-bureau-survey-thanksgiving-dinner-cost-down-4>.



Sources:

1. *Farm Bureau Survey: Thanksgiving Dinner Cost Down 4%*. (2020, November 19). American Farm Bureau Federation. Retrieved June 10, 2022, from <https://www.fb.org/newsroom/farm-bureau-survey-thanksgiving-dinner-cost-down-4>.
2. *Winter Holidays Data Center*. (n.d.). National Retail Federation. Retrieved January 24, 2022, from <https://nrf.com/topics/holiday-and-seasonal-trends/winter-holidays/winter-holidays-data-center>.
3. Wisniewski, M. (2019, December 3). *How Much Should You Spend On Your Holiday Gifts?* Bankrate. Retrieved June 10, 2022, from <https://www.bankrate.com/personal-finance/how-much-should-you-spend-on-holiday-gifts/>.
4. *Toys For Tots Gift Guidelines*. (n.d.). Murphy Insurance Agency. Retrieved June 10, 2022, from <https://www.dfmurphy.com/resources/Toys-for-Tots/Gift-Guidelines.aspx>.

Activities Not Included in the Recreation Basket

Reading

Although 37% of American adults say that they get “a great deal of meaning and fulfillment in their lives” from reading for pleasure, according to Pew Research in 2017, the reading habit has been on decline in the adult population.¹⁴⁶ According to ATUS, the average percentage of adults who read daily declined from 26.3% in 2003 to 19% in 2017.¹⁴⁷ Thus, we decided to not include reading in the recreational activity bundle. However, even if an LMI family wanted to read to their children for educational purposes, they would have access to 9,045 public libraries across the U.S. where borrowing books is free of charge.¹⁴⁸

Religion and Civic Activities

¹⁴⁶ Ingraham, C. (2018, June 29). *Leisure reading in the U.S. is at an all-time low*. The Washington Post. Retrieved January 23, 2022, from <https://www.washingtonpost.com/news/wnk/wp/2018/06/29/leisure-reading-in-the-u-s-is-at-an-all-time-low/>.

¹⁴⁷ Ibid.

¹⁴⁸ *Fast Facts*. (n.d.). National Center for Education Statistics. Retrieved January 23, 2022, from <https://nces.ed.gov/fastfacts/display.asp?id=42>.

We do not allocate spending to tithing because it is not common among American adults; only 5% American adults are tithers.¹⁴⁹ We also do not allocate any driving costs to political events or volunteering sites because we maintain that one can be an active citizen by emailing, writing to, and calling representatives, which is “minimal” political engagement.

¹⁴⁹ 30+ *Church Giving Statistics - 2022 Update*. (2021, December 31). Balancing Everything. Retrieved January 24, 2022, from <https://balancingeverything.com/church-giving-statistics/>.