

Preliminary Investigation (PI-0277)

Caltrans Division of Research, Innovation and System Information

Airport Closure in the State of California



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The Caltrans Division of Research, Innovation and System Information (DRISI) receives and evaluates numerous research problem statements for funding every year. DRISI conducts Preliminary Investigations on these problem statements to better scope and prioritize the proposed research in light of existing credible work on the topics nationally and internationally. Online and print sources for Preliminary Investigations include the National Cooperative Highway Research Program (NCHRP) and other Transportation Research Board (TRB) programs, the American Association of State Highway and Transportation Officials (AASHTO), the research and practices of other transportation agencies, and related academic and industry research. The views and conclusions in cited works, while generally peer-reviewed or published by authoritative sources, may not be accepted without qualification by all experts in the field. The contents of this document reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the California Department of Transportation, the State of California, or the Federal Highway Administration. This document does not constitute a standard, specification, or regulation. No part of this publication should be construed as an endorsement for a commercial product, manufacturer, contractor, or consultant. Any trade names or photos of commercial products appearing in this publication are for clarity only.

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Executive Summary

Background

Many airports in California were built during World War II to support military air operations such as aircraft maintenance and pilot training. After the war, the military donated the land to local counties and communities. For many years, investments were made in these airports, but currently the number of public use airports are decreasing. In the 1960s there were 275 public-use airports, and by 2019 there were 242. In the last decade, eight general aviation airports were either revoked, suspended, or closed to the public.

The Division of Aeronautics at Caltrans is seeking an understanding of general aviation airport closure and the threats leading to closure. They are interested in discovering the full extent of economic impacts that airport closures have had on municipalities, counties and the State. Aeronautics have compiled a list of specific closed/threatened airports and is seeking information on the reasons which have led to their closure. The information will be used in developing a marketing strategy and toolkit to assist airport sponsors in writing airport business plans to educate communities on aviation issues.

To assist in this effort, a literature review was conducted on public use airports and the issues surrounding their closure using resources available from the Transportation Library, California State Library and the Internet.

Summary of Findings

The publications were grouped into categories based on the level of usefulness to Caltrans:

- **Most Useful Publications:** Publications selected for this category include detailed and specific information relevant to airport closures and economic impact.
- **Useful Publications:** These publications address the issues but are not as relevant.
- **Least Useful Publications:** These publications may be relevant but often contain general information.
- **Caltrans Publications:** These documents were produced by Caltrans on the topic. This information may be dated but is related to Division of Aeronautics efforts.

Each of these categories is further subdivided as necessary into the following topics:

- Airport closures
- Economic Impact
- Operational Considerations
- Environmental Concerns
- Land Use Policies
- Public Safety
- Advocacy

A search was conducted for recent literature from State Departments of Transportation on Economic Impact Plans of Aviation or State Aviation Plans. The links to these plans are included in Appendix A alphabetized by State.

Airport Closures

ACRP Report 44 is a guidebook on why airports close and what measures can be done to prevent closures.

Economic Impact

The report *Contribution of General Aviation to U.S. Economy in 2018* presents data that general aviation is a strong contributor to the United States economy.

The report *The Economic Impact of Civil Aviation on the U.S. Economy*, November 2016 offers the latest 2014 data.

The report *The Economic Impact of Civil Aviation on the U.S. Economy Economic Impact of Civil Aviation by State*, September 2017 is a supplement to the November 2016 report. It provides a snapshot of aviation activity for all 50 States.

Economic Impact Study of Long Beach Airport estimated the economic impact of Long Beach Airport on the Los Angeles-Long Beach Combined Statistical Area.

San Diego International Airport Economic Impact Study estimates and analyzes the economic impact the airport has on the San Diego region.

Economic Impact Study of the Sacramento County Airport System is to estimate the current economic impact of the Sacramento County Airport System on Sacramento County.

Burbank Bob Hope Airport in FY2013: Economic Impact Analysis estimates the economic and fiscal impacts of the airport, providing a review of recent airport history to national trends and the economic impact on Los Angeles County.

2017 Economic Impact of the Truckee Tahoe Airport is an analysis of the economic impact of the airport within the Lake Tahoe region.

The Economic Impact of San Jose International Airport is a quantitative study based on collecting data at the airport and statistical reports.

Economic Impact Assessment For Buchanan Field and Byron Airport summarizes the economic impact assessment that Buchannan Field and Byron Airport have in the local and regional communities.

John Wayne Airport Economic Impact Study summaries the economic contributions of the airport to the Orange County region.

The Economic Significance of General Aviation Airports in Rural Areas discusses various methods for measuring the economic significance of rural general aviation airports and using input-output techniques specifies a procedure for measuring economic impacts of rural general aviation airports and airport-related businesses.

Current and Historical Trends in General Aviation in the United States in 2012, this report studies trends in General Aviation and what this will mean to the aviation industry as a whole.

Aviation in California: Benefits to Our Economy and Way of Life done by Caltrans Division of Aeronautics examined and quantified the benefits of aviation in California's economic life.

Operational Considerations

MTI report 11-21 on Low-Cost Carriers (LCC) growth at smaller and secondary airports in California. The increase in growth has led to local communities regulating noise. These restrictions have led to the growth of LCC at major hubs, making it harder for smaller airports to compete.

The Connecticut Statewide Airport System Plan, published in 2016, studied a reduction in the number of public-use airports that decreased from 24 to 20. The study determined the privately owned non-NPIAS facilities, having a small number of aircraft were at the highest risk of closure. Reasons for closure was lacking the ability to attract high-end aircraft to use the facilities.

Environmental Concerns

ACRP Report 15 is a toolkit for Airports on how to improve communications with the public about issues related to aircraft noise exposure.

Aircraft Emission Impacts in a Neighborhood Adjacent to a General Aviation in Southern California measured in real-time air pollutant concentrations downwind of Santa Monica Airport.

Neighborhood-scale Air Quality Impacts of Emissions From Motor Vehicles and Aircraft, A mobile monitoring platform was used to measure real-time air pollutant concentrations in different environments, including Santa Monica Airport.

ACRP Report 45 is a roadmap for airports to identify gaps in research and knowledge in the areas of sustainability and environmental issues for the next 5 years.

Land Use

AOPA's Guide for Airport Advocates Participating in the Planning Process is a guidebook to assist airport advocates to learn the terminology, political groups, and industry practices to be more effective in their activities.

Protecting Your Airport: Your Role and Your Tools, a brochure on Wisconsin Land Use Law and regulations for general aviation advocates.

Protecting Our Airports and Our Communities Airport Land Use Compatibility Planning in California, a brochure by Caltrans on California Land Use Law for the aviation community in California.

California County Didn't Need Environmental Assessment of Close Airport, this article discusses the Court Case *Sunset Sky Ranch Pilots, et. al. versus County of Sacramento* in California.

California Airport Land Use Planning Handbook, This handbook in its fourth edition is designed to provide guidance in the development of airport Land Use compatibility plans.

Public Safety

Role of General Aviation Airports in Medical Service Delivery Rural Kansas Communities this study was done by the Kansas Department of Transportation on how general aviation delivers critical medical care to rural communities and the benefits provided exceed the cost of operating the airports.

The Save Carmel Valley Open Space organization is working on purchasing Carmel Valley Airport as an open space and to keep it open for emergency use.

Washington State Department of Transportation report WA-RD 557.1 is a qualitative study of rural general aviation airports in Washington State to discover how rural airports contribute to their local communities and what the possible threats are in the future.

Advocacy

ACRP Report 28 is a guidebook for small airports on developing a marketing plan.

New Mexico and Minnesota have developed passport programs for pilots to encourage more usage of general aviation airports in their States.

AOPA produced a guidebook, *Economic Impact of General Aviation Airports*, discussing where to find economic impact resources for general aviation airports.

Gaps in Findings

Very little research has been conducted on a national scale, or perhaps such research remains proprietary and unavailable. This is important as airport operations have a significant role in influencing air travel. Studies available for individual states may only apply to the conditions in that state. Another gap concerns the reasons why all the airports on the airport closure list closed. Not all the airports listed had information that was clear or accessible. There is very little information on successful interventions to prevent general aviation airport closures. In particular, no studies addressed the potential impact on aviation with the implementation of high-speed rail in California.

Next Steps

The California Department of Transportation can gain insight from the more sophisticated studies referred to in this preliminary investigation to plan future efforts. Caltrans may want to use a contractor to conduct its own economic impact study of general aviation airports in California. The last one, *Aviation in California: Benefits to Our Economy and Way of Life* was done in 2003 by Economics Research Associates. They also may want to follow the lead of Washington State and conduct a qualitative study of key informant interviews of rural general aviation airports to understand the economic benefit and how integrated rural airports are to their communities.

Detailed Findings

Key Word Search

Economics, General Aviation Airports, Airports, Closure, Airport Finance, Airport Management, Airport Zoning, Economic Competition, Business Failures, Economic Development, Airport Ownership, Southern California.

Website Searches: Google, Microsoft Academic, TRID, Google Scholar, Ebsco, FHWA, IATA, AOPA, General Aviation Manufacturers Association, RosaP, Scopus.

Most Useful Publications

Airport Closures

SMO closures begin June 16 as city launches pavement removal project, General Aviation News, 2019.

<https://generalaviationnews.com/2019/06/11/smo-closures-begin-june-16-as-city-launches-pavement-removal-project/#comments>

This article discusses the removal of the runway from Santa Monica Airport. The project begins June 16, 2019, with a target completion date of Sept. 6. Most work will be performed during nighttime closures from 9 p.m.-7 a.m. Santa Monica City officials claim they have the right to close the airport due to an agreement reached with the Federal Aviation Association in 2018. The National Business Association, Aircraft Owners and Pilots Association, and General Aviation Manufacturers Association petitioned the FAA to reevaluate the agency's prior approval for the city to use airport funds for portions of the pavement removal and reseeding project.

County hopes to sell Lost Hills Airport for \$4.3 million, Bakersfield.Com 2019.

https://www.bakersfield.com/news/county-hopes-to-sell-lost-hills-airport-for-million/article_f0b6c48a-3c5f-11e9-b8ca-0f9355255f3f.html

This article discusses how Kern County would like to sell Lost Hills Airport so it could use the money to improve the other two airports Meadows Field and Kern Valley which have much more use.

Business Jet Ops Drop Sharply at Santa Monica Airport, AINOnline, 2018.

<https://www.ainonline.com/aviation-news/business-aviation/2018-03-16/business-jet-ops-drop-sharply-santa-monica-airport>

This article discusses the impact the shorten runway has had on business jet traffic. There was an increase in helicopter traffic although overall traffic at this airport is down.

Carmel Valley residents band together to purchase vintage airfield as parkland, Monterey County Weekly, 2018

https://www.montereycountyweekly.com/news/local_news/carmel-valley-residents-band-together-to-purchase-vintage-airfield-as/article_8de5e4b4-7f1b-11e8-a744-7f3dc51b8cff.html

This article describes the efforts of Carmel Valley Save Our Open Space to buy Carmel Valley Airport to prevent residential development on the property.

California Considers Closing GA Airport in San Jose AINOnline, 2018

<https://www.ainonline.com/aviation-news/business-aviation/2018-12-18/california-considers-closing-ga-airport-san-jose>

This article describes the vote of the Santa Clara County Board of Supervisors to close Reid-Hillview Airport (RHV) in east San Jose and to consolidate operations at San Martin Airport. The plan was opposed by the Aircraft Owners and Pilots Association, who wrote to the board against the closure of Reid Hillview Airport.

Santa Monica Airport will Close Forever on December 31, 2028, Santa Monica City Council Reaches Historic Agreement with the Federal Aviation Administration and the Department of Justice, City of Santa Monica, 2017.

<https://www.santamonica.gov/press/2017/01/28/santa-monica-airport-will-close-forever-on-december-31-2028-santa-monica-city-council-reaches-historic-agreement-with-the-federal-aviation-administration-and-the-department-of-justice>

This press release by the City of Santa Monica announces the final closure date of the Santa Monica Airport in an agreement with the FAA and the Department of Justice. Has a link at the end of the article to all litigation documents in this case.

Banning attempts again to close its airport, Record Gazette, 2017.

https://www.recordgazette.net/news/local/banning-attempts-again-to-close-its-airport/article_6b86f094-2b6f-11e7-8fbb-6f14962d3377.html

This article discusses how the City Council voted to Close Banning Airport. The decision was influenced by a report by Diamond Bar-based HdL, which concluded that keeping the airport was not in the city's best interest.

Can this airport be saved? : the fight over the nation's busiest single-runway airport, Air & Space Smithsonian, 2014

<https://www.airspacemag.com/flight-today/can-airport-be-saved-180952758/>

This article discusses the conflict over closing Santa Monica Airport.

Carmel Valley Vintage Airfield 1941 – 2002, Carmel Valley Historical Society, 2014.

<http://carmelvalleyhistoricalsociety.org/wp-content/uploads/2015/07/Carmel-Valley-Vintage-Airfield-museum-version.pdf>

This history was done by Carmel Valley Historical Society on the Carmel Valley Airport from its origins in the 1930s to 2014. The airport officially closed in 2002, but it has been used for emergency fire missions since then. It is currently used as an open land park space. Property is owned by the Delfino Family Trust.

Goodbye Rialto Airport – Hello Target, Calpilots.org, 2013.

<https://calpilots.org/goodbye-rialto-airport-hello-target-2/>

This article is about the closure of Rialto Airport after the City of Rialto assumed ownership of the airport in August 2005. In December 2005 the city council adopted resolutions to relocate aviation activities from the Rialto Airport to other facilities. The City approved the Renaissance Specific Plan to redevelop the site as a mixed-use development. The economic downturn delayed progress on the redevelopment. However, after the FAA approved closure, and once the San Bernardino Sheriff's department had a new facility, the airport was closed.

Rialto Airport destined to be a distant memory? AINOnline, 2009.

<https://www.ainonline.com/aviation-news/2009-06-02/rialto-airport-destined-be-distant-memory>

This article discusses the impending closure of the Rialto Airport and the events that led up to it.

A Guidebook for the Preservation of Public-Use Airports, Transportation Research Board, 2011.

<http://www.trb.org/main/blurbs/165624.aspx>

This report provides a Guidebook that describes why public-use airports close and identify measures and strategies that can be undertaken to help preserve and prevent their closure. This Guidebook presents step-by-step procedures on how to identify risk factors that can increase the potential of a future airport closure and how to formulate an effective airport preservation program. Included is a detailed listing and evaluation of the reasons, or risk factors, why public-use airports close, addressing economic, operational, revenue, business, land use, and other issues. The Guidebook also identifies potential groups interested in preserving public-use airports and offers practical checklists for identifying and addressing critical issues as part of a comprehensive strategic airport planning program in support of preservation efforts. It presents practical guidance on how to delineate primary airport closure risk factors, identifies extensive resources of value to those working to preserve airports, and collects a wide range of documents in the appendices to support the development of a practical and implementable strategic plan for airport preservation. This Guidebook is intended to be used by state and local agencies, airport owners/operators, and other public and private groups with an interest in preserving public-use airports.

Rialto Airport destined to be a distant memory? AINOnline, 2009.

<https://www.ainonline.com/aviation-news/2009-06-02/rialto-airport-destined-be-distant-memory>

This article discusses the impending closure of the Rialto Airport and the events that led up to it.

Why Your Community Needs Its Airport: Because once it's gone, it's gone forever, Business & Commercial Aviation, 2006

<http://www.calairports.com/Why%20Your%20Community%20Needs%20Your%20Airport.pdf>

This article discusses how developers are now the “enemy” of general aviation airports. They approach local cities and counties with the argument that they would receive more money if the land was developed for housing or commercial uses. The article proposes suggestions to

general aviation airports to counter the trend and the importance of compatible land-use policies around airports.

How to Save Your Airport, Business & Commercial Aviation, 2005.

<https://trid.trb.org/view/753008>

The article reports that with large tracts of land becoming scarcer in urban areas, developers and politicians are turning their attention toward general aviation airports. Contra Costa County, California's director of airports, Keith Freitas admitted that there was no precedent for the U.S. Federal Aviation Administration (FAA) allowing a federal land-grant or AIP-funded airport to be closed and replaced by another field, which cuts to the heart of the discussion: If development interests can convince the FAA that the alternate-airport concept is sound and the agency buys off on the Buchanan proposal, then CCR becomes the precedent, and the developers have found the instrument by which they can finally circumvent federal regulations obligating airport managements to keep these fields open. In the final analysis, the subcommittee chairman said the proponents of the closure didn't make a strong enough case for closing the airport.

Economic Impact

Contribution of General Aviation to the US Economy in 2018, Price Waterhouse Cooper, LLC., 2020.

<https://nbaa.org/wp-content/uploads/advocacy/legislative-and-regulatory-issues/business-aviation-essential/General-Aviation-Contribution-to-the-US-Economy-20200219.pdf>

This report was produced for the following organizations: Aircraft Electronics Association, Aircraft Owners and Pilots Association, Experimental Aircraft Association, General Aviation Manufacturers Association, Helicopter Association International, National Air Transportation Association, and National Business Aviation Association. It discovered that General Aviation was a strong contributor to the United States economy.

California

From executive summary page E-1:

At 148,300 jobs, California has the largest number of jobs directly or indirectly attributable to the general aviation industry. The top 10 states ranked by the total number of jobs attributable to general aviation (from the direct, indirect, induced, and enabled impacts) in 2018 were California, Florida, Texas, Georgia, Ohio, New York, Illinois, Arizona, Kansas, and Pennsylvania (Table E-2, below). Combined, these 10 states accounted for 53 percent of the total jobs attributable to general aviation in the US in 2018.

From executive summary page E-3:

The total (direct, indirect, induced, and enabled) contribution of general aviation to GDP is largest in California at \$18.5 billion. The top 10 states ranked by total GDP attributable to general aviation in 2018 were California, Florida, Texas, Georgia, New York, Ohio, North Carolina, Illinois, Pennsylvania, and Kansas (Table E-4, below). These 10 states accounted for 56 percent of the total GDP attributable to general aviation in the US in 2018.

From page 13:

General aviation's total labor income impact ranges from a low of \$112 million in Rhode Island to a high of \$11.3 billion in California. The top 10 states in terms of total labor income supported were California (\$11.3 billion), Florida (\$6.4 billion), Texas (\$5.5 billion), Georgia (\$3.8 billion),

New York (\$3.4 billion), Ohio (\$3.0 billion), Pennsylvania, (\$2.9 billion), Kansas (\$2.6 billion), Illinois (\$2.2 billion), and North Carolina (2.2 billion).

Economic Impact Study of Long Beach Airport, Unison Consulting, 2019.

<http://www.longbeach.gov/globalassets/lgb/resources/airport-reports/edited-lgb-economic-impact-study-final-report->

This report estimated in 2018 the economic impact of Long Beach Airport on the Los Angeles-Long Beach Combined Statistical Area.

General Aviation

From page 4-2:

As one of the busiest general aviation airports in the world, general aviation operations accounted for 83 percent of total operations at LGB in 2018.

From page 4-9:

Primarily reflecting the dominant general aviation trends at LGB, noncommercial aircraft operations decreased over the years. Both general aviation and military operations together decreased 2.7 percent annually, on average, between 2001 and 2018.

From page 5-16:

Additionally, transient general aviation (GA) operations are estimated to have brought in another 71,000 visitors, assuming 50 percent of itinerant general aviation operations were transient and each operation carried 2.84 passengers on average. Based on estimated commercial passenger spending, we derived estimates of off-airport spending for transient GA passengers. Findings from economic impact studies for other airports involving both commercial service and general aviation show GA passengers spending approximately 61 percent of the amounts spent by commercial service passengers.

San Diego International Airport Economic Impact Study, CDM Smith, 2018.

<https://timesofsandiego.com/wp-content/uploads/2018/09/2017-01-06-economic-impact-study.pdf>

This report was an analysis and estimate of the economic impact of the airport in the San Diego region.

General Aviation

From page 4-7:

A similar methodology was used to estimate employment, payroll, and output impacts for visitors arriving at San Diego International Airport via general aviation aircraft. Direct general aviation visitor spending was estimated at \$16.0 million, supporting an estimated 193 jobs with an annual payroll of nearly \$5.3 million.

Final Report 2017 Economic Impact of the Truckee Tahoe Airport, Economic & Planning Systems, Inc. & Hansford Consulting, 2018

https://truckeetahoeairport.com/public_files/414-airport_economic_impact_study_-_final_-_sept_2018-pdf

This report is an analysis of the economic impact of the airport with the Lake Tahoe Region.

The Economic Impact of Civil Aviation on the U.S. Economy Economic Impact of Civil Aviation by State September 2017, FFA, 2017.

https://www.faa.gov/about/plans_reports/media/2017-economic-impact-report.pdf

The State Report provides snapshots of aviation-related economic activity for all 50 states and the District of Columbia during the calendar year 2014. This report supplements an earlier report by the FAA *The Economic Impact of Civil Aviation on the U.S. Economy*, released in November 2016.

General Aviation

From page 13:

General aviation (GA) operations contributed \$38.8 billion to total national civil aviation-related economic output in 2014. California ranked first in total economic output for general aviation at \$3.8 billion in 2014 (Table 5).

Visitor expenditures

From Page 16:

The top five states for general aviation visitor expenditures were California, Florida, Texas, Alabama, and Arizona (Table 11). All five states experience mild weather conditions that are conducive to general aviation operations.

The Economic Impact of Civil Aviation on the U.S. Economy, November 2016. FAA, 2016.

https://www.faa.gov/air_traffic/publications/media/2016-economic-impact-report_FINAL.pdf

This report has the latest 2014 data on the economic benefits of civil aviation. This report also studied productivity growth in the economy by aviation.

Economic Impact Assessment for Buchanan Field and Byron Airport, Contra Costa County Airports Division, 2016.

<https://www.contracosta.ca.gov/DocumentCenter/View/47225/Contra-Costa-County-Airports-Economic-Impact-Assessment--2016?bidId=>

This report summarizes the economic impact assessment that Buchanan Field and Byron Airport have in the local and regional communities.

From page 3:

in Fiscal Year 2015-2016, the tax revenues associated with the airports and aviation activities contributed \$2.7 million dollars to the County's General Fund and \$1.2 million to the schools. Both airports combined to provide 828 jobs, \$105.93 million in annual economic output, \$8 million in State and Local tax revenue and \$10.2 million in federal tax revenue.

The Economic Impact of San Jose International Airport, Matin Associates, 2015.

<https://www.flysanjose.com/sites/default/files/financial/Economic%20Impact%20Study%20Report%20-%20FY13-14.pdf>

This report is a quantitative study based on collecting data at the airport and statistical reports. The data was collected in 2014. The survey was only able to do a sample of the transient general aviation operators at this airport, and the estimates are considered to be on the low end.

General Aviation

From page 3:

General Aviation provided 178 jobs, \$27.1 million in business revenue, and \$8.6 million in personal income.

Burbank Bob Hope Airport in FY2013: Economic Impact Analysis, Los Angeles County Economic Development Corporation, 2014.

https://laedc.org/wp-content/uploads/2014/05/Burbank-Bob-Hope-Airport_final.pdf

This report estimated the economic and fiscal impact of the airport and providing a review of recent airport history to national trends and the economic impact on Los Angeles County.

From the executive summary:

In the fiscal year 2013, the airport provided 12,400 jobs, \$663 million in labor income, \$1.8 billion in total economic output and \$122 million in State and Local taxes.

Final Report: John Wayne International Airport Economic Impact Study, InterVistas Consulting, LLC, 2014.

<https://www.ocair.com/reportspublications/EconomicImpact/JWAEconomicImpactStudy.pdf>

This report summarizes the economic contributions of the airport to the Orange County region. The study was conducted in 2012.

From the executive summary:

2012 Annual Direct Impacts: 22,000 Jobs, 19,500 FTE jobs, \$790 million in earnings, \$1.5 billion in GDP and \$2.8 billion in economic output.

General Aviation

From page 18:

Airlines, Airline Support Services, and General Aviation combine to support 1,570 direct FTE jobs (29% of direct employment). Contributions to this employment figure are provided by passenger and cargo carriers, ground handlers, aircraft maintenance firms, and air charter services.

Current and historical trends in general aviation in the United States 2012, MIT International Center for Air Transportation, 2012.

<https://dspace.mit.edu/handle/1721.1/72392>

General aviation (GA) is an important component of aviation in the United States. In 2011, general aviation and air taxi operations represented 63% of all towered operations in the United States, while commercial aviation was responsible for 34% of those operations. It is clear that GA is a considerable component of the national airspace and airport system, even when only accounting for towered operations. Because of this significant presence, insight into GA is relevant to issues in air traffic management, air transportation infrastructure, and aviation safety, among others. Beyond the operational aspect, GA is of significance to society as a whole and to other stakeholders, including pilot groups, aircraft manufacturers, and the workforce. In 2009, general aviation generated 496,000 jobs and its total economic contribution to the U.S. economy was valued at \$76.5 billion. However, a comparison of general aviation's impact on

jobs and on the economy between 2008 and 2009, shows a 20% decrease in jobs and a 21% decrease in total economic impact in the course of a year. There is also a significant decreasing trend in the active pilot population, along with steady decreases in GA flight hours and towered operations. The objective of this thesis is to explore the details of these changing trends and to determine what drives and what hinders general aviation activity in the country

Final Report: Sacramento County Airport System Economic Impact Study 2011,

LeighFisher Management Consultants, 2011.

https://sacramento.aero/download.php?f=/SCAS_Economic_Impact_Study.pdf

This report studied the economic impact of the Sacramento County Airport System. The system includes Sacramento International, Sacramento Executive, Mather and Franklin Field. Franklin Field used a training facility that was not studied for economic impacts. Mather and Sacramento Executive are the two general aviation airports in the area.

The Economic Significance of General Aviation Airports in Rural Areas, Transportation Quarterly, 2000.

<https://babel.hathitrust.org/cgi/pt?id=mdp.39015047810828&view=1up&seq=555>

This article discusses various methods for measuring the economic significance of rural general aviation airports and using input-output techniques specifies a procedure for measuring the economic impacts of rural general aviation airports and airport-related businesses. There is evidence that the economic base, econometric and economic models are not suitable for measuring the economic significance of rural general aviation airports.

Operational Considerations

Development challenges of secondary and small airports in California, Mineta

Transportation Institute, 2012.

<https://rosap.ntl.bts.gov/view/dot/24560>

Mineta Transportation Institute did a study on Low-Cost Carriers (LCC) growth at smaller and secondary airports in California. The increase in growth has led to local communities regulating noise and these restrictions have led to the growth of LCC at major hubs and making it harder for smaller airports to compete.

Environmental Concerns

Airport Environmental Research Roadmap Narrative Report, ACRP, 2020.

https://www.nap.edu/catalog/25732/airport-environmental-research-roadmap-narrative-report?utm_source=NASEM+News+and+Publications&utm_campaign=21d79e146e-NAP_mail_new_2020_03_02&utm_medium=email&utm_term=0_96101de015-21d79e146e-107988218&goal=0_96101de015-21d79e146e-107988218&mc_cid=21d79e146e&mc_eid=da56720a0b

ACRP Report 45 is a roadmap for airports to identify gaps in research and knowledge in the areas of sustainability and environmental issues for the next 5 years. The researchers identified eight high-level themes: Sustainability, Noise, Water Quality and Availability, Air Quality and Emissions, Resiliency, Monitoring and Reporting, Natural Resources and Emerging Technologies. The report identified that General Aviation airports will continue to address air pollutant emissions and greenhouse gasses. Proposed research into the latest best practices

and methodologies to compile emissions inventories to ensure their emissions are accounted for in state implementation plans.

Under the Resiliency category, the proposed research studies if the FAA should take into account the funding formula for general aviation airports the risks of natural disasters regionally and the role general aviation airports have in such disasters.

Neighborhood-scale air quality impacts of emissions from motor vehicles and aircraft, Atmospheric Environment, 2013.

<https://doi.org/10.1016/j.atmosenv.2013.07.043>

A mobile monitoring platform (MMP) was used to measure real-time air pollutant concentrations in different built environments of Boyle Heights (BH, a lower-income community enclosed by several freeways); Downtown Los Angeles (DTLA, adjacent to BH with taller buildings and surrounded by several freeways); and West Los Angeles (WLA, an affluent community traversed by two freeways) in summer afternoons of 2008 and 2011 (only for WLA). Significant inter-community and less significant but observable intra-community differences in traffic-related pollutant concentrations were observed both in the residential neighborhoods studied and on their arterial roadways between BH, DTLA, and WLA, particularly for ultrafine particles (UFP). HEV, defined as vehicles creating plumes with concentrations more than three standard deviations from the adjusted local baseline, were encountered during 6–13% of sampling time, during which they accounted for 17–55% of total UFP concentrations both on arterial roadways and in residential neighborhoods. If instead of a single threshold value is used to define HEVs in all areas, HEV's were calculated to make larger contributions to UFP concentrations in BH than other communities by factors of 2–10 or more. Santa Monica Airport located in WLA appears to be a significant source for elevated UFP concentrations in nearby residential neighborhoods 80–400 m downwind.

Aircraft Noise: A Toolkit for Managing Community Expectations, ACRP, 2009

<http://www.trb.org/Publications/Blurbs/162800.aspx>

Aircraft noise issues are a problem for airports and this toolkit explores ways to improve communications with the public about issues related to aircraft noise exposure.

Aircraft Emission Impacts in a Neighborhood Adjacent to a General Aviation Airport in Southern California, Environmental Science & Technology, 2009.

<https://pubs.acs.org/doi/10.1021/es900975f>

Real-time air pollutant concentrations were measured downwind of Santa Monica Airport (SMA), using an electric vehicle mobile platform equipped with fast response instruments in spring and summer of 2008. SMA is a general aviation airport operated for private aircraft and corporate jets in Los Angeles County, California. An impact area of elevated ultrafine particle (UFP) concentrations was observed extending beyond 660 m downwind and 250 m perpendicular to the wind on the downwind side of SMA.

Land Use

AOPA'S Guide for Airport Advocates Participating in the Planning Process, Aircraft Owners and Pilots Association.

<https://www.aopa.org/-/media/Files/AOPA/Home/Advocacy/arptAdvocate.pdf>.

This guidebook was developed to assist airport advocates in learning the terminology, political groups and industry practices to be more effective in their activities. One case study mentioned

is Bakersfield Airport and how Caltrans “California Airport Land Use Handbook” and a pamphlet on land use planning also by Caltrans could be a model for other States. Another case study is San Diego's Montgomery Field and how help from Caltrans stopped the Sunroad development project. A toolkit is at the end of the guide to assist airport activists in planning courses of action.

Land Use Planning

From page 8:

California takes a proactive approach to land use planning. In that state, public-use airports are protected by the Airport Land Use Commission (ALUC) provision of the Public Utilities Code, specifically Section 21670 through Section 21679.5. This law, with some exceptions, requires counties with a public-use airport to establish an airport land use commission “to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public’s exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.”

From page 9:

California’s Education Code, Section 1721, provides additional protections for airports when it comes to site selection for public and charter schools. Specifically, any school district proposing to place a school within two miles of an airport runway, or even a potential airport runway included in a master plan, must notify the state Department of Education, that in turn, must notify the state Department of Transportation to investigate the site and submit a report of its findings and recommendations. If the DOT finds the site to be incompatible, state and local funds may not be used to acquire the property or fund the school.

Protecting your airport: your role and your tools, Wisconsin Bureau of Aeronautics, 2017.
<https://wisconsin.dot.gov/Documents/doing-bus/aeronautics/resources/protect-arpt.pdf>

This brochure was developed by the Wisconsin Bureau of Aeronautics for general aviation advocates on Land Use Law and Regulation to protect general aviation airports. Contact names of Wisconsin Bureau of Aeronautics are given as a resource for more information.

California County Didn't Need Environmental Assessment to Close Airport, Land Use Law Report, 2010.
<http://search.ebscohost.com.proxy.library.ca.gov/login.aspx?direct=true&db=asn&AN=47840095&site=ehost-live>

This article discusses the court case Sunset Sky Ranch Pilots Association, et al versus County of Sacramento in California. An appeal was filed by Daniel Lang, the Sunset Sky Ranch Airport in Sacramento County and the Sunset Sky Ranch Pilots Association to the County Board of Supervisors regarding the decision of the County to deny the renewal of the conditional use permit (CUP) that they applied for. According to the petitioners, the County should have investigated the environmental impact of the airport's closure before deciding in this case.

CEQA

From page 3:

One of the exemptions from CEQA’s requirements is for “projects which a public agency rejects or disapproves,” § 21080(b)(5). The purpose of this exemption is to prevent public agencies from being “forced to commit their resources to the costly and time-consuming environmental review process for proposed private development projects slated for rejection, whatever the reason for agency approval.” The County’s rejection of the petitioners’ application fell squarely within this exemption, the court concluded.

Public Safety

Functions and Benefits of Rural Airports In Washington, Washington State Department of Transportation Aviation Division, 2002.

<https://www.wsdot.wa.gov/research/reports/fullreports/557.1.pdf>

This report is a qualitative study of rural general aviation airports in Washington State to discover how rural airports contribute to their local communities and what the possible threats are in the future.

Role of General Aviation Airports in Medical Service Delivery to Rural Kansas Communities, Kansas State University, 1999.

<https://rosap.nfl.bts.gov/view/dot/13926>

This report prepared by KSU for the Aviation Division of Kansas Department of Transportation studied the physical conditions of general aviation airports, the types of medical flight providers and their needs and CEO's of rural Kansas hospitals and 'flying doctors'. The findings were that general aviation airports had a significant role in rural medical care in Kansas and saved lives.

Advocacy

Marketing Guidebook for Small Airports, ACRP, 2010.

<http://www.trb.org/main/blurbs/163059.aspx>

This is a guidebook for small airports on developing a marketing plan.

Useful Publications

Airport Closures

Defunct Calistoga gliderport brings back memories, Napa Valley Register, 2017.

https://napavalleyregister.com/calistogan/business/defunct-calistoga-gliderport-brings-back-memories/article_009e12e7-2f55-5d8f-8043-3eee64e01a7c.html

This article is about the Calistoga Airport which closed in 1999 because the owner of the property was breaking even with the glider business, and the difficulty of landing at the airport with a glider.

The final closure of Rialto Municipal Airport is now almost guaranteed, San Bernardino Sun, 2014.

<https://www.sbsun.com/2014/09/14/final-closure-of-rialto-municipal-airport-is-now-almost-guaranteed/>

This article describes the closing of Rialto Municipal Airport in September 2014.

Meadowlark Airport – The Little Airport That Was, Calpilots.org, 2013.

<https://calpilots.org/meadowlark-airport-the-little-airport-that-was-2/>

This article has the history of former Meadowlark Airport and what led to its closure in 1989. The land was sold to developers for housing and retail.

Airport Closures Not Always Easy, AINOnline, 2012.

<https://www.ainonline.com/aviation-news/aviation-international-news/2012-11-03/airport-closures-not-always-easy-0>

This article discusses current trends in the closing of general aviation airports in the United States nationwide.

Airport gone, not forgotten; historical society plaque project recalls dangerous strip, San Diego Union-Tribune 2007

<https://www.sandiegouniontribune.com/sdut-airport-gone-not-forgotten-historical-society-2007apr06-story.html>

This article is about the dedication of a historical marker plaque by the Temecula Valley Historical Society to remember the Rancho California Airport which closed in 1989. The airport closed when French Valley Airport opened.

Embattled Airports: The Value of GA Airports often Goes Unnoticed, Professional Pilot, 1997.

<https://trid.trb.org/view/564596>

Case studies of challenges to Meigs Field, Chicago; Reid-Hillview Airport, San Jose; Igersikorsky Airport, Fairfield County, Connecticut.

Economic Impact

Economic Impact of General Aviation Airports, Aircraft Owners and Pilots Association.

<https://www.aopa.org/-/media/files/aopa/home/supporting-general-aviation/get-involved/airport-support-network/aopa-resources-for-you/120112asn-ga-economic-impact.pdf>

This guidebook discusses where to find economic impact resources for General Aviation airports and has a sample questionnaire for use if an independent economic study is not available.

Airport Size and Urban Growth, *Economica*, 2019.

<https://www.scopus.com/record/display.uri?eid=2-s2.0-85041730406&doi=10.1111%2fecca.12262&origin=inward&txGid=a3b443e11f1e3f0f3981052017678cc9>

This paper studies how airports affect economic growth in US metropolitan areas. The main finding is that airport size has a positive effect on local employment, with an elasticity of 0.04. The effect appears to be mostly due to a positive effect on services employment and to be concentrated in parts of the metropolitan area nearer the airport. To further understand how an airport affects the local economy, the effects on several other variables are estimated. Airport size is found to have positive effects on the number of firms, the population size, the rate of employment, and GDP in the local area. The magnitudes of the effects on population and employment suggest that airport expansion creates jobs for both existing residents and migrants to the area. The estimation uses a novel technique to identify the effects of airport infrastructure. It applies instruments for changes in airport size that are calculated from overall changes in air traffic in a set of categories: the airlines, the types of aircraft, or the distances flown. The technique could be adapted to study the effects of other types of infrastructure.

Aviation Connectivity Impacts on Regional Economies in the United States, Transportation Research Record, 2018.

<https://doi.org/10.1177/0361198118799704>.

This paper uses applied microeconomics techniques to investigate the impact of aviation connectivity on 548 regional economies in the United States. Using lagged socioeconomic variables to instrument for future aviation connectivity, the paper finds a significant impact of connectivity on long-run economic growth. An increase of 100 in the city's Global Connectivity Index is associated with an increase in the long-term total personal income of the city by up to \$254,350,000, and up to 613 more jobs. For a city like Myrtle Beach, SC, with a connectivity index close to the mean connectivity levels of core-based statistical areas, a 100-point increase in the index represents a 1.03% increase in air connectivity. The paper also finds evidence suggesting that the impact of connectivity on regional economies is significantly more pronounced in the largest 100 cities, whereas these effects vanish in smaller cities

General Aviation's Contribution to the U.S. Economy, Merge Global, 2006.

<https://gama.aero/documents/general-aviations-contribution-to-the-u-s-economy-may-2006-2/>

This study was done by Merge Global for the General Aviation Manufacturers Association. The study used general aviation activity using FAA standard definitions and annual flight activity and applied industry derived per-hour costs for operating various types of aircraft. The economic contribution was calculated by using regional economic models.

Economic contribution

From table 2: Leading States in Terms of GA Total Economic Contribution in 2005 (\$billions):

California was ranked number one with a total of \$18.2 Billion which was 12.2% of United States General Aviation.

Perhaps the sky's the limit? Airports and employment in local economies, McGraw, Marquise J, 2015

https://matrix.berkeley.edu/sites/default/files/media_publication/airportspaperJMPv220_HighQ.pdf

This paper considers the effects of small and mid-size commercial airports on their local economies over the post World War II period, specifically 1950-2010. To estimate these effects, a detailed, novel dataset of Census Based Statistical Area (CBSA) level employment outcomes, geographic, transportation, and city characteristics, along with previously unexploited historical aviation data. Using an instrumental variables approach with three instruments – the locations of collection points on the Air Mail system of 1938, a network of Federally constructed emergency airfields in the early years of aviation, and a 1922 plan of airways for national defense – as well as two alternative estimators – one-to-one Mahalanobis distance matching with caliper and pooled synthetic controls

The results show that airports have had substantial effects on CBSA population and employment over time. Specifically, relative to non-airport cities, the presence of an airport in a CBSA has caused population growth ranging between 14.6 percent and 29 percent, total employment growth of between 17.4 percent and 36.6 percent, tradable industry employment growth of between 26.6 percent and 42.6 percent, and non-tradable industry employment growth of between a non-statistically significant 2.7 percent and 16.1 percent. These effects vary by region, city size, and traffic levels. Most of these growth effects occurred over two periods: first, at the beginning of the post-war period, 1950-1960, and then, during the formative years of the jet age, 1970-1980, after which the effects of aviation remained constant. The larger effect on tradable industry employment implies that the overall employment and population effects may result from direct effects on tradable sector industry productivity, perhaps by facilitating information flows. Effects vary by initial city size and region and are generally robust to the choice of instruments and/or estimator.

Are airports engines of economic development? A dynamic panel data approach, Urban Studies, 2015.

<http://search.ebscohost.com/login.aspx?direct=true&db=asn&AN=103004731&site=ehost-live>

This paper uses a data analysis technique to study air travel and the economic development of primary airports in the United States. The study also researched if developing air service from a local airport, if prioritizing strengthening existing air service or attracting service to new destinations. The researchers discover adding a new destination creates more jobs in the local area vs. increasing current service. The study also researched if local authorities should promote existing airlines servicing and airport or to attract new carriers. Their research showed to allow the dominant carrier to develop its presence is good for business. A number of non-stop flights to airports has a positive impact on economic development. Also adding new destinations yields a stronger impact on regional development than adding traffic to existing destinations.

Airports and urban sectoral employment, Journal of Urban Economics, 2014.

<https://doi.org/10.1016/j.jue.2014.01.002>

This paper estimates the effects of airport infrastructure on relative sectoral employment at the metropolitan-area level, using data from the United States. To address the potential endogeneity in the determination of airport sizes, the 1944 National Airport Plan is used to instrument for the current distribution of airports. Airport size is found to have a positive effect on the employment share of tradable services, controlling for overall local employment, but no measurable effect on manufacturing or most non-tradable sectors. The effect of airport size on overall local employment is practically zero, suggesting that airports lead to specialization but not growth at the metropolitan-area level. The implied elasticity of tradable-service employment with respect to airport size is approximately 0.22. The results are relevant to the evaluation of airport construction or improvement projects that aim to benefit the local economy by making travel to and from the metropolitan area more convenient.

Airport noise and residential housing valuation in southern California: A hedonic pricing approach, International Journal of Environmental Science & Technology, 2013.

<https://link.springer.com/article/10.1007%2F03325812>

A large and detailed data set is used to examine the influence of airports and airport light paths on housing prices. The results indicate that individuals consider airport proximity and airport flight patterns in their housing purchases. This shows that there exist two distinct measurable price gradients that distinguish large airports from small airports. In addition, homes located under the flight path of a large airport have a price gradient that is significantly larger than homes located under the flight path of a small airport.

Airport costs and production technology: a translog cost function analysis with implications for economic development, Georgia Institute of Technology, 2011.

<https://rosap.ntl.bts.gov/view/dot/24394>

Based upon 50 large and medium hub airports over a 13-year period, this research estimates one and two output translog models of airport short-run operating costs. The output is passengers transported on non-stop segments and pounds of cargo shipped. The number of runways is a quasi-fixed factor of production. Statistical tests reject the null hypothesis that airport production technology is homothetic and homogeneous, exhibits constant returns to scale, or reflects a Cobb-Douglas production technology.

From the analysis, airports operate under increasing returns to runway utilization and increasing ray economies of scale for the two-output model. Airport operating costs were 2% higher after the September 1, 2001, terrorist attacks. The input demand for general airport operations is price elastic, and Morishima substitution elasticities indicate that Personnel, Repair-Maintenance-Contractual services, and General Airport Operations are substitutes in production. For the one output passenger model, an exploratory analysis identifies a relationship between the average cost of airport operations and indicators of economic development. All else constant, a decrease in an airport's real average operating costs is associated with increasing metropolitan employment, the number of establishments, and real gross metropolitan and state products.

The role of small airports in economic development, Journal of Airport Management, 2010.
<http://search.ebscohost.com/login.aspx?direct=true&db=asn&AN=47938169&site=ehost-live>

As one of the most important transport modes in the USA, air transportation has both influenced economic development and been influenced by it. Knowing the scale of these effects is important both for the development and management of airports and for policymakers who make strategic decisions regarding airport planning and investment. Prior studies of the economic impacts of air transportation have focused mainly on the ties between large airports and regional economic development. Much less attention has been paid to the impact of small airports on their local areas. Some argue that small airports operating a passenger model, not unlike an urban transit service can contribute significantly to regional economic development. However, with the exception of some work on high-income tourist destinations, previous studies provide little clear evidence to support a strong positive correlation between local air transportation and economic development. Furthermore, the direction of causation between air traffic and economic development is not entirely clear: regional economic development driven by other factors can lead to more air traffic; however, it is also possible that by generating traffic, airports act as a catalyst for local investment. This study uses a sample of 66 small airports in Virginia to explore the functional relationship between local air transportation and regional economic development.

The Importance of Reliever Airports in the USA, College Aviation Review, 2007.
http://www.aaa.aero/docs/CAR_2007_No1.pdf

The purpose of this study was to (1) conduct a literature review of reliever airports with a focus on historical reliever airport funding, including the importance of reliever airports and reliever airport employment; and (2) to conduct a survey of reliever airports to determine (A) the total number of employees directly employed by the operating entities; and (B) a total on-airport employment estimate. The economic impacts of reliever airports will be reviewed in order to provide information to policymakers about the importance of reliever airports from an employment perspective.

The literature review found little existing data pertaining to reliever airport employment. Additionally, the currency of the data could not be reliably verified. Reliever airports surveyed in this research are those designated as reliever airports by the Federal Aviation Administration in a document entitled "National Plan of Integrated Airport Systems." A total of 253 of 278 designated reliever airports were contacted via mail and afforded the opportunity to participate in the survey. A total of 25 reliever airports were not included in the study due to a lack of contact information or a change in airport status. Responses from 197 (77.9 % of those contacted) airports were received at the completion of the data collection period.

Survey results indicate that respondents reported 2,906 full-time operating entity employees, 419 part-time operating entity employees, and 95,489 total on-airport employees. Additionally, the ten airports that reported the highest number of operating entity employees comprise 45.7% of all responding reliever airport operating entity employees. The ten airports that reported the highest number of on-airport employees comprise 57.7% of all responding reliever on-airport employees.

General Aviation's Contribution to the U.S. Economy, Merge Global, 2006.
<https://gama.aero/documents/general-aviations-contribution-to-the-u-s-economy-may-2006-2/>

This study was done by Merge Global for the General Aviation Manufacturers Association. The study used general aviation activity using FAA standard definitions and annual flight activity and applied industry derived per-hour costs for operating various types of aircraft. The economic contribution was calculated by using regional economic models.

Economic contribution

From table 2: Leading States in Terms of GA Total Economic Contribution in 2005 (\$billions):
California was ranked number one with a total of \$18.2 billion which was 12.2% of United States General Aviation.

Operational Considerations

Regional Perspectives on General Aviation and Reliever Airports: A Case Study of the Phoenix Metropolitan Area. Regional Science Policy and Practice, 2017.
<https://rsaconnect.onlinelibrary.wiley.com/doi/abs/10.1111/rsp3.12091>

Reliever airports hold a special place within the National Plan of Integrated Airport Systems (NPIAS) in the United States. Established in the 1960s, the purpose of reliever airports was to draw general aviation traffic away from congested primary airports located in larger metropolitan areas. In time, many of these airports evolved from simply relieving local air traffic congestion to functioning as both operational and economic hubs for the communities they serve. The purpose of this paper is to highlight the development of the reliever airport network in the United States and to explore their role (existing or potential) in the larger air transport system, as well as the associated regions that they serve. Specifically, a case study of the Phoenix Arizona metropolitan area and its reliever network is conducted. The results suggest that although many relievers are destined for their original purpose, others may have the opportunity to diversify their form and function.

Advocacy

PASSPORT TO ADVENTURE IS ON! Fly New Mexico Airports! No Cost! Aviation Quarterly Newsletter, 2020.
https://dot.state.nm.us/content/dam/nmdot/Aviation/aviation_newsletter_WINTER_issue.pdf

This article by the New Mexico Aviation Division of the New Mexico Department of Transportation describes the new passport program for pilots to encourage them to visit general aviation airports and to have a local business, hotel, restaurant, outdoor recreation and WiFi information available for each airport. For each airport visited, a stamp goes into the passport which can be redeemed for prizes at the end of the promotion.

Fly Minnesota Airports, Minnesota Department of Transportation, Office of Aeronautics and the Minnesota Council of Airports.

<http://www.dot.state.mn.us/aero/aviationeducation/aviationpassport/passport.html>

This program is to encourage pilots to fly Minnesota airports by collecting stamps in a passport and depending upon how many airports are visited, different levels of prizes are awarded. Stamps can be collected by going to aviation museums or FAA seminars in the state.

Least Useful

Airport Closures

Borges-Clarksburg Airport Closed Until Further Notice, learntoflysacramento.com, 2015.

<http://learntoflysacramento.com/338/temporary-closure-borges-clarksburg-airport-closed/>

This article announces the closure of Borges-Clarksburg Airport to low approaches until further notice for the safety of airport personnel.

Developer Wants To Close California Airport, AirGuide Business, 2010.

<http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=48923158&site=ehost-live>

This article quotes developer Jeff Edwards, who claims tearing down the existing Oceano County Airport and the land being redeveloped for commercial use would be a "significant cash flow for the County". Aviators who use the airport disagree.

Economic Impact

Flying High, Planning, 2007.

<http://search.ebscohost.com.proxy.library.ca.gov/login.aspx?direct=true&db=asn&AN=25027804&site=ehost-live>

The article focuses on the important contribution of airports to the economic growths of towns in the U.S. It cites the significance of the Yampa Valley Regional Airport in Steamboat Springs, Colorado to the business success of the heavy industrial contractor TIC Holdings Inc. which is based in the said locality and to the growth of tourism and real estate business. It also mentions the great effect of the Bend Municipal Airport to the economic development of Bend, Oregon. Furthermore, it stresses that airports are considered as transforming forces in the tourist towns of the country.

Operational Considerations

Impacts of high-speed rail on airlines, airports and regional economies: A survey of recent research, Transport Policy, 2019.

<https://doi.org/10.1016/j.tranpol.2019.06.010>

This paper first reviews studies on the impacts of air-HSR competition on airlines, focusing on the overall effects of parallel HSR services on passengers' mode choice as well as on airlines' flight frequency, traffic volume, fares, service quality, and market power. The modal complementarity and air-HSR intermodal services, together with the network feature of the airline business, are also examined. The paper then reviews theoretical and empirical findings

on the impacts of HSR on airports and regional economies. Here, the main insights include: First, HSR can have a traffic redistribution effect on airport traffic; in particular, some primary hub airports with good air connectivity may gain traffic while others may lose traffic. Second, to mitigate congestion at hub airports, policymakers may consider diverting some traffic to regional airports by promoting air-HSR intermodal services. Third, as HSR may stimulate long-haul/international air traffic, its overall impact on emission reduction remains unclear. Finally, similar to the impacts on airport traffic, a spatial disparity of economic activities may also rise after the introduction of HSR. In general, the disparity tends to rise between the cities with HSR and those without HSR, as the former gets better accessibility. However, among the cities with HSR services, the disparity between the large and small cities could increase or decrease depending on several factors.

The potential short-term impact of a Hyperloop service between San Francisco and Los Angeles on airport competition in California Transport Policy, 2018.

<https://www.sciencedirect.com/science/article/pii/S0967070X17301270?via%3Dihub>

This paper explores what impact a Hyperloop connection between San Francisco and Los Angeles would impact the regional airports. The researchers believe that this would change California into a single network airport system. It was also estimated that San Francisco International Airport would be the most hurt by the additional transportation competition.

Strategic reactions of regional airports facing competition from the high-speed train: Lessons from France, Journal of Airport Management, 2013.

<http://search.ebscohost.com/login.aspx?direct=true&db=asn&AN=85404473&site=ehost-live>

The development of a high-speed train network in Europe has been one of the major threats to regional airports. While intermodal airports have benefited from such an evolution, regional airports have seen a considerable reduction in traffic, mainly due to the diminution of feeding flights to the national hub. When facing such a challenge, regional airports can implement several strategies to maintain their growth. The first strategy relies on developing a transverse network which would allow airlines to avoid any frontal competition with the train; the second involves developing feeding flights with other hubs in order to reduce dependence on the national airline. Some final remarks are given to help airport managers to apply such strategies soundly.

Caltrans Publications

California Airport Land Use Planning Handbook, Division of Aeronautics, 2011.

<https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf>

This is the fourth edition of this handbook, which is designed to provide guidance in the development of airport Land Use compatibility plans.

Airport Land Use Compatibility Planning in California Protecting Our Airports and Our Communities, Division of Aeronautics.

https://web.archive.org/web/20070206114118/http://www.dot.ca.gov/hq/planning/aeronaut/documents/ALUCbrochure_2.pdf

A brochure by Caltrans on California Land Use Law for the aviation community in California.

Aviation in California: Benefits to Our Economy and Way of Life, Economics Research Associates, 2003.

<https://cityofwatsonville.org/DocumentCenter/View/1008/Aviation-in-California-Benefits-in-Our-Economy-and-Way-of-Life-PDF>

This report studied the entire airport system in California to study the current trends and the positive economic impact aviation has on our economy.

Appendix 1: State DOT Plans State Agencies

Alabama

Alabama State Airport System Plan, Alabama Department of Transportation, 2005.

<https://www.dot.state.al.us/aerweb/alabamaStateAirportSystemPlan.html>

Alaska

The Economic Contribution of the Alaska International Airport System to Alaska's Economy in 2017, Northern Economics, Inc., 2017

http://www.alaskaasp.com/media/3208/economic_contribution_of_the_aiaa_final.pdf

Arizona

The Economic Impact of Aviation in Arizona, Merritt, Richard, 2012.

https://azdot.gov/sites/default/files/2019/05/the_economic_impact_of_aviation_in_arizona_tech_report_june_2013_final.pdf

Arkansas

2036 Arkansas Statewide Airport Systemwide Plan Update Executive Summary, Arkansas Department of Aeronautics, [n.d.].

http://fly.arkansas.gov/uploads/7/5/7/1/7/5772239/asasp_executive_summary.pdf

California

Aviation in California: Benefits to Our Economy and Way of Life, Economics Research Associates, 2003.

<https://cityofwatsonville.org/DocumentCenter/View/1008/Aviation-in-California-Benefits-in-Our-Economy-and-Way-of-Life-PDF>

Colorado

2013 Economic Impact Study of Colorado Airports, Colorado Department of Transportation, 2013.

<https://www.codot.gov/programs/aeronautics/Economic%20Impact%20Study>

Connecticut

Connecticut Statewide Airport System Plan, Connecticut Airport Authority, 2016.

<https://ctairports.org/wp-content/uploads/2017/05/FINAL-CSASP-REPORT.pdf>

Delaware

Economic Impact Assessment Of Delaware Airports 2018 Technical Report, R.A. Wiedemann & Associates, Inc., 2019.

https://deldot.gov/Programs/aviation_svcs/pdfs/sys_plan/DE-EI-2018-TechnicalReport.pdf?cache=1576626266494

Florida

Florida Statewide Economic Impact Study, Florida Department of Transportation, 2019.

<https://www.fdot.gov/aviation/economicimpact.shtm>

Georgia

Georgia Statewide Airport Economic Impact Study Executive Summary, CDM Smith, 2011.

<http://www.dot.ga.gov/IS/AirportAid/AviationPlanning#tab-3>

Hawaii (no report found)

Idaho

Idaho Airport System Plan (IASP) Update, Idaho Department of Transportation, 2019.

<https://www.idaho-airport-system-plan.com/documents/>

Illinois

Illinois Airport Inventory Report 2012, Illinois Department of Transportation, 2012.

<http://idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Aero/2012inventory.pdf>

Indiana

Executive Summary Indiana Airports' Economic Impact Study 2012, Indiana Department of Transportation, 2011.

https://www.in.gov/indot/files/Aviation_FinalEconomicImpactStudy.pdf

Iowa

Uses and Benefits of Aviation in Iowa, Wilbur Smith Associates, 2009.

https://iowadot.gov/aviation/pdfs/TECHREPORTDOC_Lownocover.pdf

Kansas

Kansas Aviation Economic Impact Study, Burns McDonnell Engineering Company Inc., 2017

<http://www.ksdot.org/Assets/wwwksdotorg/bureaus/divAviation/pdf/2016EISFinalReport.pdf>

Kentucky (No report found)

Louisiana

Louisiana Airports Economic Impact Study Update, CDM Smith, 2019.

http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Aviation/Aviation%20Documents/LA%20Economic%20Impact%20Study%20Update%202019%20White_Paper%20-%20FINAL.pdf

Maine

The economic impact of airports in Maine, Wilbur Smith Associates, 2006.

<https://www.maine.gov/mdot/aviation/docs/currentstudies/economicimpacts.pdf>

Maryland

The Economic Impact of Public Use Airports in Maryland, Martin Associates with Landrum & Brown, Incorporated, 2018.

https://www.marylandregionalaviation.aero/_media/clients/publications/2018/MDOT%20MAA%202018%20Economic%20Impact%20Statement%20-%20Final%20Report.pdf

Massachusetts

Massachusetts Statewide Airport Economic Impact Study Update Executive Summary, CDM Smith, 2019.

https://www.marylandregionalaviation.aero/_media/clients/publications/2018/MDOT%20MAA%202018%20Economic%20Impact%20Statement%20-%20Final%20Report.pdf

Michigan

2017 Michigan Aviation System Plan, Mead & Hunt, 2017.

https://www.michigan.gov/documents/aero/MDOT_2017_MASP_Technical_Report-Appendices_588889_7.pdf

Minnesota (In process of updating Statewide Aviation Plan)

Public Involvement Plan Draft for Public Comment State Aviation System Plan Update, Minnesota Department of Transportation, Aeronautics, 2017.

<https://www.dot.state.mn.us/aero/planning/sasp/SASP%20Public%20Involvement%20Plan.pdf>

Mississippi

Executive Summary Economic Impact of Mississippi Airports, CDM Smith [n.d.].

[https://mdot.ms.gov/documents/Aeronautics/Guides/Economic%20Impact%20\(Executive%20Summary\).pdf](https://mdot.ms.gov/documents/Aeronautics/Guides/Economic%20Impact%20(Executive%20Summary).pdf)

Missouri

Missouri State Airport System Plan Update, Missouri Department of Transportation, 2019.

<https://sites.jviation.com/MoDOTAirportSystemPlan/documents/MoSASP-Final-Technical-Report.pdf>

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Appendix 2: Original Problem Statement

Aeronautics Draft PI for Airport Closure Literary Search (September 19, 2019)

Problem Statement:

Since the State of California issues permits for public use airports, the airport's permit status may be unchanged for many years before a local governing authority makes a determination to change the land use status for the land occupied by the airport, ultimately leading to a temporary or permanent change to airport permit's status. However, once a public use airport's permit status is changed from open to another status (i.e. Suspended, Revoked, Abandoned, or Closed) by Caltrans Division of Aeronautics, it is unlikely to be reinstated, and may for the intent of this research be considered "closed."

The National trend of airport closures continues, particularly at privately owned, public use airports. Over the last decade, eight of California's public use airport permits have either been revoked, suspended, or the airport was closed to the public, and except for Rialto Municipal Airport, none have been replaced in another geographic location or had their permit restored to an open status.

To avoid further airport closures, the Division of Aeronautics must first understand what threats lead to their closure, the resulting estimated economic impact, and what strategies the State of California can recommend to an airport sponsor to proactively avoid the potential for any airport closure. The State of California has an interest to reverse the decline in public use airports.

As a regulatory steward for the advancement of aviation facilities, the State's intent is to maximize its return on investment of State and Federal aviation tax revenues, while ensuring that each county has a functioning and safe landing facility for the aviation community to conduct air operations of all types, such as for pleasure, tourism, commerce, law enforcement and emergency response.

Policy and decision makers need full information regarding the reasons for airport closure, the timeline of events leading up to its demise, and a list of strategies to better preserve public use airports that benefit the local and regional communities to potentially reverse the trend of airport closure. Without that information actions may be taken to support airports that would most benefit from it in time to reverse the potential for closure. The purpose of this PI is to conduct a literature search to document information that will lead to the development of a toolbox from which airport sponsors can write effective and supportive airport business plans and impose marketing strategies to educate their communities of the true value of their aviation assets and related functions that might solidify its future availability.

Background:

Historically, most airports in California were built to support the military air operations in the 1940s, including aircraft maintenance and pilot training. By 1949, many communities had welcomed the donated land back from the military and have continuously developed the sites to meet their growing civil aviation needs. Today, fewer airports now handle a growing number of operations. In 1960s there were as many as 275 public use airports, which by 2019 is reduced to 242. Many local airport sponsors, public and private, consider their airport(s) economic generators. However, the broader community may not have full information regarding the benefits of their airport(s). Also, it is well known that incompatible land use around airports may cause for local restrictions to reduce hours of aircraft operation, such as curfews during late evening to early morning, which may contribute to eventual closure of the airport.

Furthermore, there are many external influences that could be monitored and addressed before the airport is threatened further. However, the private sector argues that local governments would be better off if they converted the airport land to an alternative use, such as mixed-use development, alternative energy facilities, etc. This scenario is possibly best demonstrated by the City of Santa Monica, which plans to close the Santa Monica Municipal Airport (SMO) and convert the land to a community park, housing and commercial mixed-use development. Another example is Roy Williams Airport, which was recently closed and converted to a solar farm by the private owner. The State of California needs answers to questions that caused airport closures, as well as how to measure the economic loss related to these closures, and possibly most important to future planning, how can the Division of Aeronautics influence the reversal of this trend and preserve these valuable and irreplaceable aviation assets.

Select references from the State Aeronautics Act (Public Utilities Code Section 21001 et seq):

- Develop information programs to increase the understanding of the role of aviation in the economic development of the State. (PUC §21002(i))
- Sponsor or cosponsor aviation education and information seminars which meet the needs of pilots and other members of the industry for current information on aviation safety, planning, and airport management. (PUC §21002(j))
- Promote the role of publicly owned or operated airports as a matter of statewide importance in the development of commerce and tourism. (PUC §21690 (c)(e))
- Since the proper operation of the State's publicly owned or operated airports is essential to the welfare of the State and its people, the Legislature recognizes and affirms such operation as a governmental function to be discharged in furtherance of the policy of securing the benefits of commerce and tourism for the State and its people. (PUC §21690 (e))