

U.S. Transportation Policy

1916 - 2019:
First Roads
Then Air
When Rail?



Who is this man?

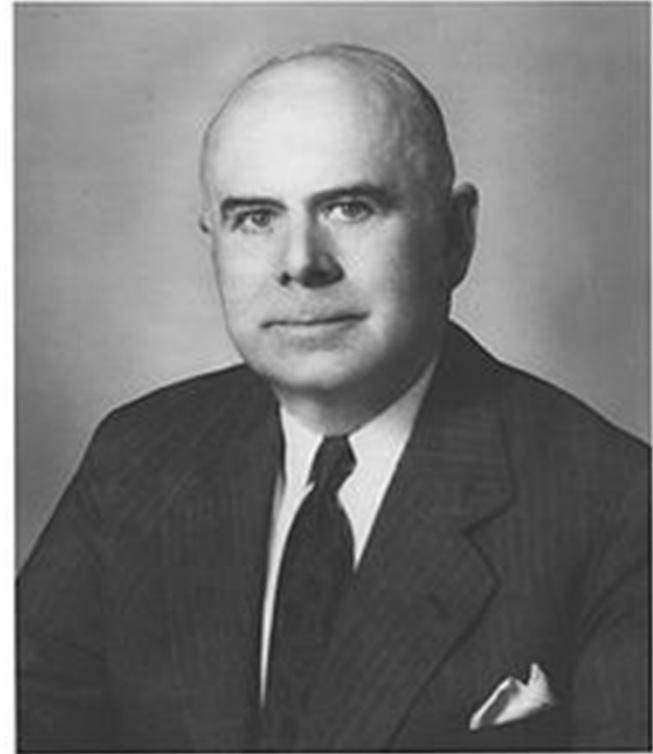
Does anybody recognize him?

Probably not one American in a million recognizes his name.

Yet between 1916 and 1953 he changed American life forever, and today every American is dependent on him.

Thomas Harris MacDonald served as Chief of the U.S. Bureau of Public roads from 1919 to 1953 and between 1919 and 1929 built America's first highway system.

Until he started building concrete highways in 1919, the U.S. had almost no paved roads outside the major cities.



Thomas H. MacDonald (1881-1957),

Chief, U.S. Bureau of Public Roads 1919-1953

It's hard to believe the U.S. at one time—in fact for a long time—had no highways.

- Between 1726 and 1848 the British government built a network of 40-foot-wide hard-surfaced roads that connected London with all parts of England, Scotland and Wales.
- Under Napoleon, the French constructed a network of highways allowing the army to reach any part of the Republic within about a three-days' march.
- But even after the Louisiana Purchase doubled the size of the country in 1803 the American nation made almost no effort to build a public highway system. The American highway system came into being only after a century of struggle.

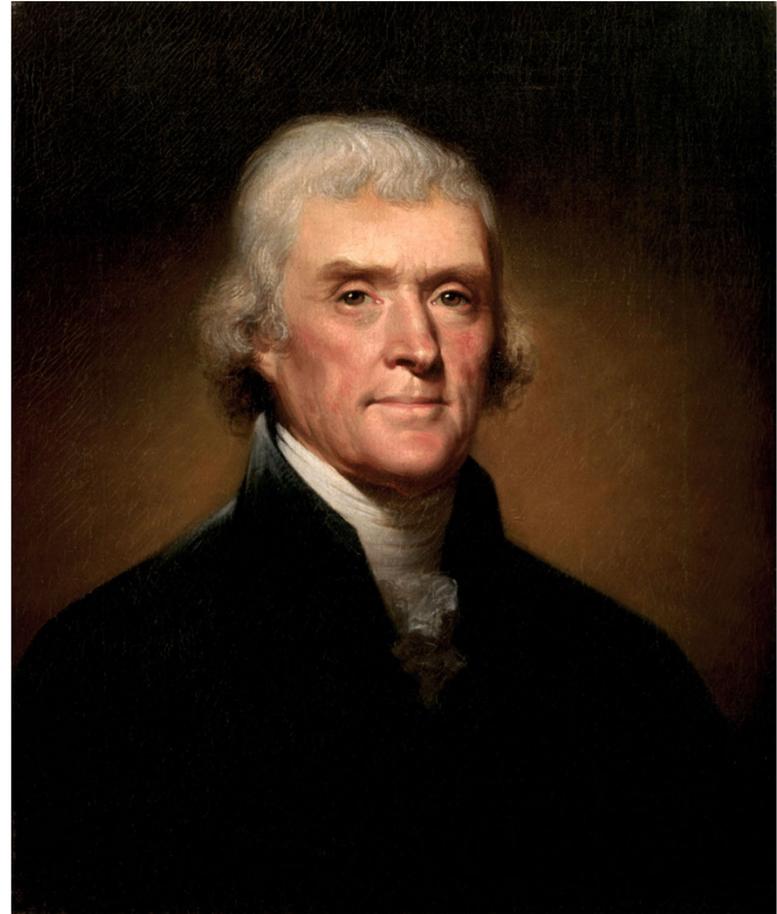
***Why did it take until 1919 before
America started building
highways?***

Because for more than 100 years it was believed that the U.S. government had no constitutional authority to create a highway system.

In a letter to a friend in 1786, Thomas Jefferson wrote:

“I experience great satisfaction at seeing my country proceed to facilitate the intercommunication of its several parts by opening rivers, canals and roads. How much more rational is this disposal of public money than that of waging war.”

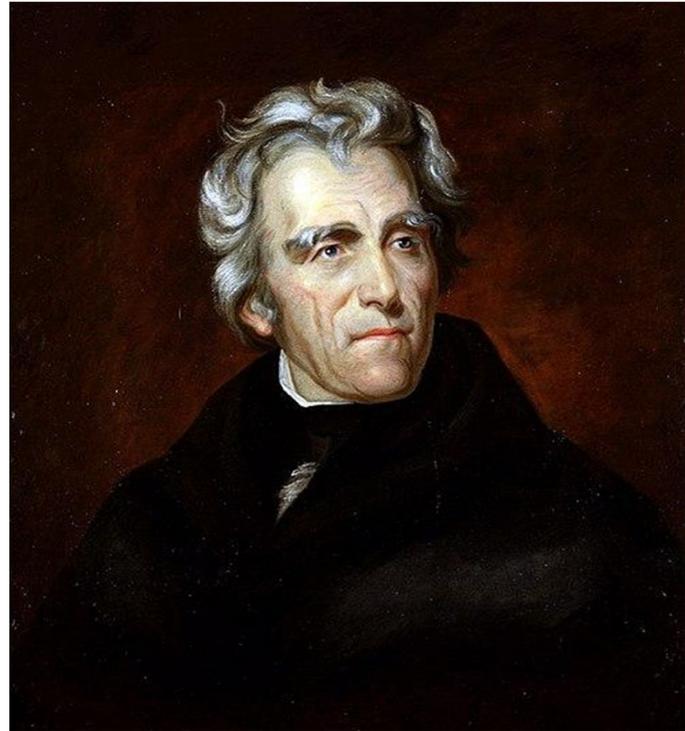
But Jefferson refused to sign congressional appropriations for road building. He said the Constitution gave him no authority to do so.





President James Monroe took the same approach when Congress passed a highway bill in 1822. He not only vetoed it but wrote a **25,000-word essay** explaining that Congress had no constitutional authority to appropriate funds for roads or dictate where roads should be built.

In 1830 President Andrew Jackson vetoed a congressional appropriation for a 60-mile road from Maysville, Ky., to Lexington. His reasons: “...the Federal Constitution must be obeyed, State-rights preserved, our national debt *must be paid*, direct taxes and loans *avoided* and the Federal Union preserved.”



And there the matter stood for 75 years.



WHAT FARMERS HAVE TO CONTEND WITH IN SOME SECTIONS OF ILLINOIS.

- Outside of the cities, all roads were built by counties.
- Almost all roads were dirt and turned to mud whenever it rained.
- Roads were poorly marked, usually had names rather than numbers and did not always connect with roads in the adjacent counties.
- Maps were hard to obtain and often inaccurate.
- County road commissioners were amateurs, lacked engineering expertise, often engaged in corrupt deals with crooked contractors.

By the 1880s, times had changed, and popular agitation for highways had become loud and persistent. The agitation came largely from two groups:

- Farmers
- Bicyclists

Farmers wanted “hard roads” so they could get their grain to the local elevator and bring shipments of consumer merchandise home from the freight house at the local railroad depot. But in some parts of the country, such as Iowa, the roads were dry only about four months of the year.

And bicyclists wanted “hard roads” because that’s the only surface on which a bicycle can travel.

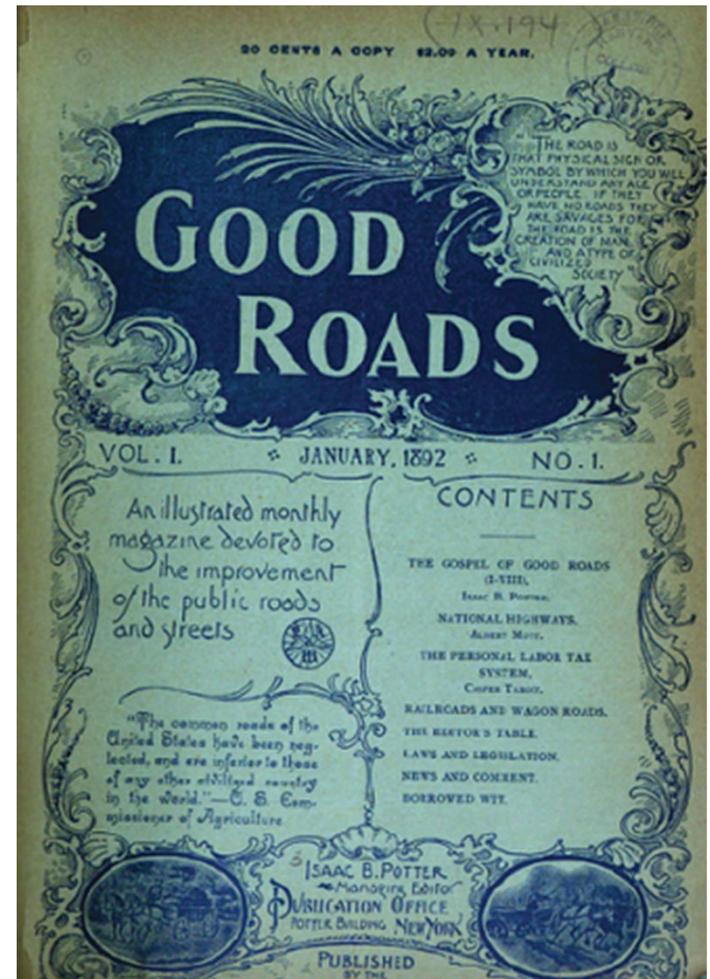
- Col. Albert Pope’s 1878 “Safety Bicycle” had made cycling extremely popular.
- By 1900 the market supported more than 300 manufacturers, and more than a million Americans owned a bicycle. The League of American Wheelmen issued brochures calling for paved highways and sent lecturers around the country to proselytize for a national highway program.



WILLIAM VAN WAGONER.
Who Bears the Red Packet Eastward From Syracuse.

The U.S. government's response?

In 1893 Congress established the U.S. Bureau of Road Inquiry. The federal government wasn't ready to build highways yet, but if you sent it a letter asking about highways a bureaucrat would send you back a brochure explaining how to build one.



So what really turned American policy around and got our nation a highway system? An emergency: World War I revealed serious weaknesses in the performance of the railroad industry, and the federal government responded with two bold strokes:

- President Wilson temporarily “nationalized” the railroad industry
- Congress passed the Federal Aid Highway Act. America decided to supplement privately owned railroad network with a publicly owned highway system (and revival of the waterway industry with new dams, locks, channels and a government-owned barge line). Federal government is now officially in the transportation business through funding of modern infrastructure.



Why railroads failed in Word War I

- 1906 Hepburn Act crippled railroad initiative.
- Rigid rate-approval process reduced profits.
- Reluctance to invest left railroads short of capital investment when France and Britain started ordering wartime supplies from U.S.
- .
- Trains ran late, power shortages crippled capacity, munitions, supplies and troops failed to connect with ships at East Coast ports.
- When U.S. entered war in 1917, President Wilson “nationalized” railroads for the duration.
- **To supplement railroads with a parallel, publicly owned transportation system, Congress passes 1916 Federal Aid Highway Act, appropriating \$75 million to be matched 50/50 with states to build national network of uniform, hard-surfaced roads.**

“Constitutional objection” overcome by giving ownership of roads to states.

- In 1919, President Wilson hires Tom MacDonald to be “Chief” of U.S. Bureau of Public Roads and build 42,000-mile system.
- MacDonald trains hundreds of engineers in reinforced-concrete technology, forces states to create highway departments, enforces uniform highway-building specifications, gets system built out in 10 years.
- MacDonald creates uniform signage: East/West roads get even numbers, north/south odd; All roads must connect with same in neighboring state. To receive federal funds, each state must have a highway department headed by a civil engineer.
- Americans take to the highways, auto industry booms, American culture changes radically.
- Railroads begin to lose market share.

1946: Americans are ready to fly



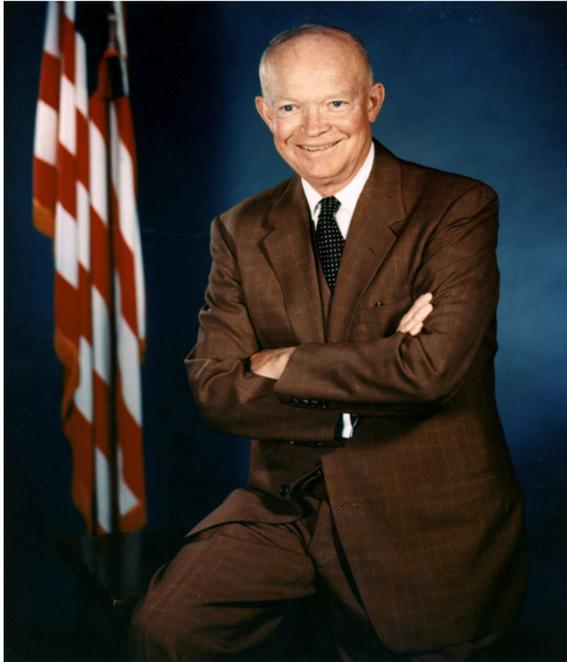
- Prior to World War II U.S. has a small, struggling airline industry, much of it directly subsidized and almost all of it indirectly subsidized through the Air Mail system.
- Because of World War II emergency, aircraft industry makes rapid technological strides: bigger planes, more powerful engines, longer range, improved navigation.
- Following postwar demobilization in 1945, Army Air Corps and Navy begin selling off war-surplus multi-engine transport planes at bargain prices, jump-starting airline fleet buildup. DC-3s, DC-4s and C-46s are *cheap*.

President Truman provides the airports

- Truman's Federal Aid Airport Program (FAAP), appropriating \$525 million over 6 years for paved runways, runway extensions, runway lighting and terminals.
- At the same time, the Air Corps and Navy begin discharging thousands of experienced pilots with multi-engine ratings. With no need to spend time or money training them, airlines put them to work immediately flying the new airliners.
- Americans begin to switch from rail to air travel in large numbers, overwhelming the small pre-war airports.



The future of air travel looks bright until Dwight Eisenhower is elected president in 1952.



Ike's platform: Reduce unnecessary federal spending.

- Depression is over.
- We won World War II.
- New Deal spending no longer needed--private investment can drive economic growth. In first year Ike's "dynamic conservatism" cuts federal payroll by 200,000 workers and budget by 10 per cent--including airport aid.

Federal Airport Aid Program, along with traffic-control development and airspace management, become major victims of GOP economic reform.

- Airport budget is cut by 15 per cent.
- Ike says, “It is time for the federal government to stage an orderly retreat from civil aviation...the national interest will usually be served best by a privately owned and operated industry, which is supported by a minimum of Federal funds or Federal basic facilities and services operated at the lowest feasible cost and financed, where possible, by charges levied on the users of the services.”
- Ike claims the cities and the airlines can fund all needed airport improvements without federal help (even though some airlines are still on subsidy).
- Frederick B. Lee, Ike’s appointee to head the Civil Aeronautics Administration, tells a staff meeting: “The Federal Government cannot play the Great White Father to all segments of civil aviation in all communities for all time.”
- Budgets for control-tower staffing, radar, instrument-landing systems and CAA personnel are cut drastically.

Failure to invest in civil aviation leads to “Decade of Disasters”

- Sept. 16, 1950, American Airlines flight 723, Convair 240 from Boston to Chicago Midway via Hartford and Albany, is put in a holding pattern with two other flights near Albany airport because low ceiling is forcing planes to land on instruments. Two other flights land successfully, but flight 723 mistakes its position on final approach and flies between two 365-foot-tall radio masts. Both wings are clipped and aircraft crashes, killing all 28 aboard.
- Jan. 22, 1952, American Airlines flight 6780, a Convair 240, crashes on instrument approach to Newark Airport killing all 23 aboard, including former Sec. of War Robert Patterson. Aircraft hits a row of houses more than 2,000 feet to right of glide path.
- Oct. 29, 1953--British Commonwealth Pacific Airways Flight 304 DC-6 from Honolulu crashes into mountain near Redwood City, Calif., after failing to find San Francisco International Airport. 19 killed. Inadequate instrument landing system.
- June 30, 1956--TWA flight 2, a Lockheed Constellation, and United Flight 718, a DC-6, collide over Grand Canyon, killing 128. Americans start to ask “What’s going on?”
- Jan. 31, 1957--New Douglas DC-7B on test flight from Douglas Aircraft plant at Santa Monica is struck at 25,000 feet over Van Nuys by Air Force F-89 Scorpion fighter on test flight. Pilot of F-89 dies, radar operator ejects. All four DC-7B crew killed, along with three children on school playground. Air Force and civilian controllers used different systems. Neither knew other had a plane in the area.
- April 21, 1958--Air Force fighter collides with United DC-7 near Las Vegas, killing all 49.
- May 20, 1958--Air National Guard jet collides with Capital Airlines Viscount over Brunswick, Md., killing 12.
- Feb. 3, 1959--American Airlines flight 320, a new Lockheed Electra, crashes into the East River on approach to LaGuardia Airport, killing 65 of 73 aboard. Runway is notorious for poor lighting. Official CAB investigation report blames “Sensory illusion with respect to height and attitude resulting from visual reference to the few lights existing in the approach area.”¹

U.S. begins to realize it is tragically behind in meeting the demand for modern air-traffic control.

- Eisenhower administration begins approving larger budgets for airport modernization and R&D into Instrument Landing Systems and long-range radar technologies.
- In 1958 U.S. finally abolishes Civil Aeronautics Administration and creates Federal Aviation *Agency*, with bigger budget for air traffic control.
- Armed services agree to use common communications system with commercial airlines and general aviation.
- Private pilots drop objection to radio and ILS.

...and still the crashes won't quit.

One last tragedy occurs before the nation's new civil-aviation policy catches up with air-travel demand. On December 16, 1960, United Airlines flight 826, a new DC-8 en route from O'Hare Airport in Chicago to Idlewild Airport in New York, and TWA flight 266, a Super Constellation from Dayton and Columbus to LaGuardia Airport, collide over New York Bay while being guided to a landing at their respective airports. The TWA plane crashes in an open field on Staten Island. The United jet crashes into the densely populated Park Slope neighborhood in Brooklyn. All 128 people on the airliners and eight people on the ground are killed. Investigators find the United jet was 8 miles outside of the position ordered by the New York controllers. Most U.S. airliners are still piston-powered, and the speed differential between jets and propeller planes makes them hard to manage in the same airspace, particularly during final approach.



In 1966 Congress establishes U.S. Department of Transportation; Federal Aviation Agency becomes Federal Aviation Administration. Computerized air traffic control and uniform instrument landing systems and runway markings become universal nationwide. Accident rate and fatality rate plummet as airline travel booms.



LESSONS LEARNED

- Developing a new U.S. transportation policy is *hard*:
 - takes a long time
 - frequent disappointments, setbacks, missteps--no clear playbook
 - widespread public misunderstanding, skepticism, hostility, fear
 - susceptible to political intrigue
 - never enough money
 - struggle for legitimacy (perceived as “not real,” “not needed,” “not the job of federal government”).
- Solution may require an “emergency,” real or perceived
- Solution must be BIG (small fixes won’t work--“Get big or get out.” “Make no little plans.”)
- All U.S. transportation programs are basically infrastructure programs (so any realistic passenger-rail program means getting large-scale access to Class 1s).
- Steven Covey’s second rule applies: “Begin with the end in mind.” Forget incremental approach. Design an ideal system, make it big--and go for it. “The people who get what they want are the people who know what they want.”
- Success seems to require a “ramrod”-type executive (MacDonald, Robert Moses, Quesada, who bullies, pre-empts and steps on toes to get things done).
- Start Now.



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