The Economic Impact of High-Speed Rail Construction in California: An Analysis Using the REMI Model

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The Task

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This report examines the economic impact of the first major construction package of California's high-speed rail system. Construction Package 1 (CP1) represents $2.654 billion of spending across many different industries in two major areas:

- Construction (71%)
- Right-of-way acquisition (23%)

Our focus is on estimating the employment impacts of CP1 spending.

This report does not examine economic impacts of the rail system after it is completed, such as enhanced mobility, etc. but only the initial portion of the project's construction (CP1).

Thus, it informs impacts on the California and Central Valley regional economies of construction spending associated with CP1, but it is not intended to assess the overall social value of the project.

The Team

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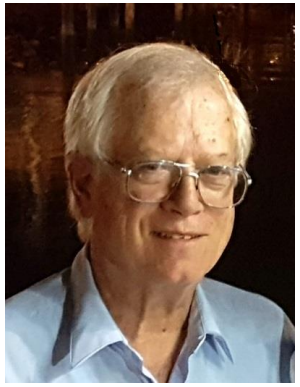

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Our Collaborators

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- California High-Speed Rail Authority
- REMI

The Bottom Line

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- Employment effects of CP1 are estimate to be in the range 25,231 to 30,309 job years (depending on scenario), which is roughly 13,000 jobs per billion (real) dollars of spending (in the base case); the corresponding (real) dollars-per-job-year figure is approximately $74,700 (in the base case). These estimates are in line with the broad range of estimates for employment increases per dollar of spending in other government infrastructure construction projects.
- The effects of CP1 spending are estimated to be higher in employment growth stimulation than equivalent spending that is given as tax cuts to households.
- We identify the main industries and regions where employment is expected to increase.

Our Approach

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This research took a three-pronged approach to examining the economic impacts of CP1 spending in the Central Valley.

- A **detailed accounting** evaluated several key data sources;
- The **REMI Model** was used to model the impacts of CP1 spending, specifically in terms of estimated full-time equivalent job-years generated through 2029;
- **Case study vignettes** were developed that qualitatively explored some of the impacts of the HSR project on real businesses and people in the Central Valley.

California high-speed rail (HSR) proposed statewide alignment as of May 2016

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CHSRA Construction Packages 1 through 5

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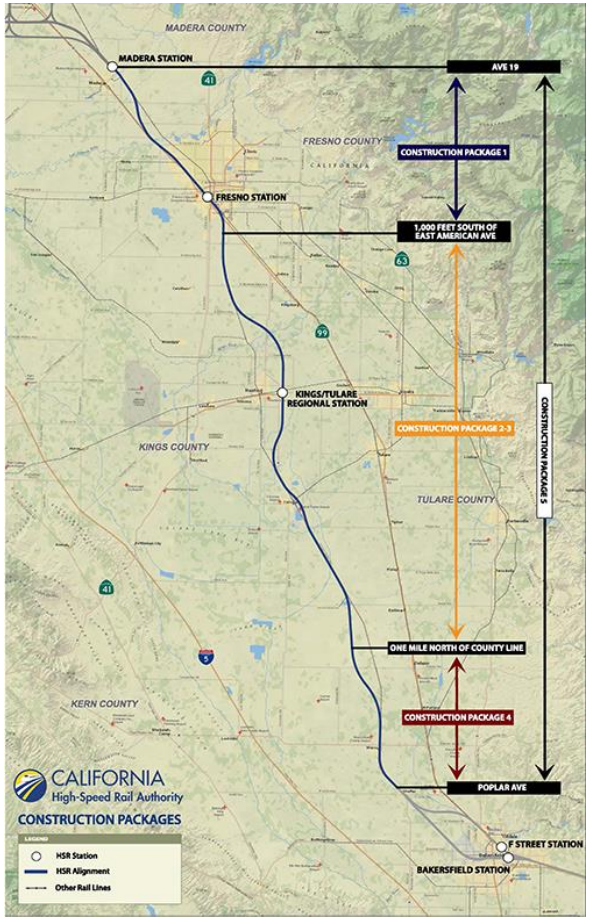

CP1

CHRSA Construction Package 1

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The Data

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- Total Project Expenditures with Forecasts (TPEF) report
- Funding Contribution Plan (FCP) reports
- Contracts and Expenditures (C&E) reports
- Master contracts file provided by CHSRA

Spending on CP1

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Category	Amount ($)	Source notes
Environmental Review	32,824,348	FCP; Task 1, Merced-Fresno section
Preliminary Engineering	16,188,140	FCP; Task 2, Merced-Fresno section
Other Project Development Work	8,150,969	FCP; Task 3, Merced-Fresno section
Rail Delivery Partner	49,876,147	FCP; 12.8% of Task 5.1.1
Network Integration	1,093,719	FCP; 12.8% of Task 5.1.2
Project Construction Management	34,208,889	FCP; Task 5.2.1
Legal	552,540	FCP; 12.8% of Task 5.3.1
Administrative	20,656,818	TPEF; 12.8% of total admin expenditure
Preliminary ROW	24,327,386	FCP; Task 6.1
ROW Services & Relocation	127,215,529	FCP; Task 6.2.1
ROW Mitigation	15,100,000	FCP; Task 6.3.1
ROW Acquisition	438,543,614	FCP; Task 6.4.1
SR-99	260,900,000	FCP; Task 8.1
Design Build	1,283,047,960	FCP; Task 8.2.1
Madera Ext	153,399,844	FCP; Task 8.2.4
Third Parties CP1	188,070,152	FCP; Task 8.2.3
	2,654,156,054	

Temporal Profile of CP1 Actual and Forecast Spending

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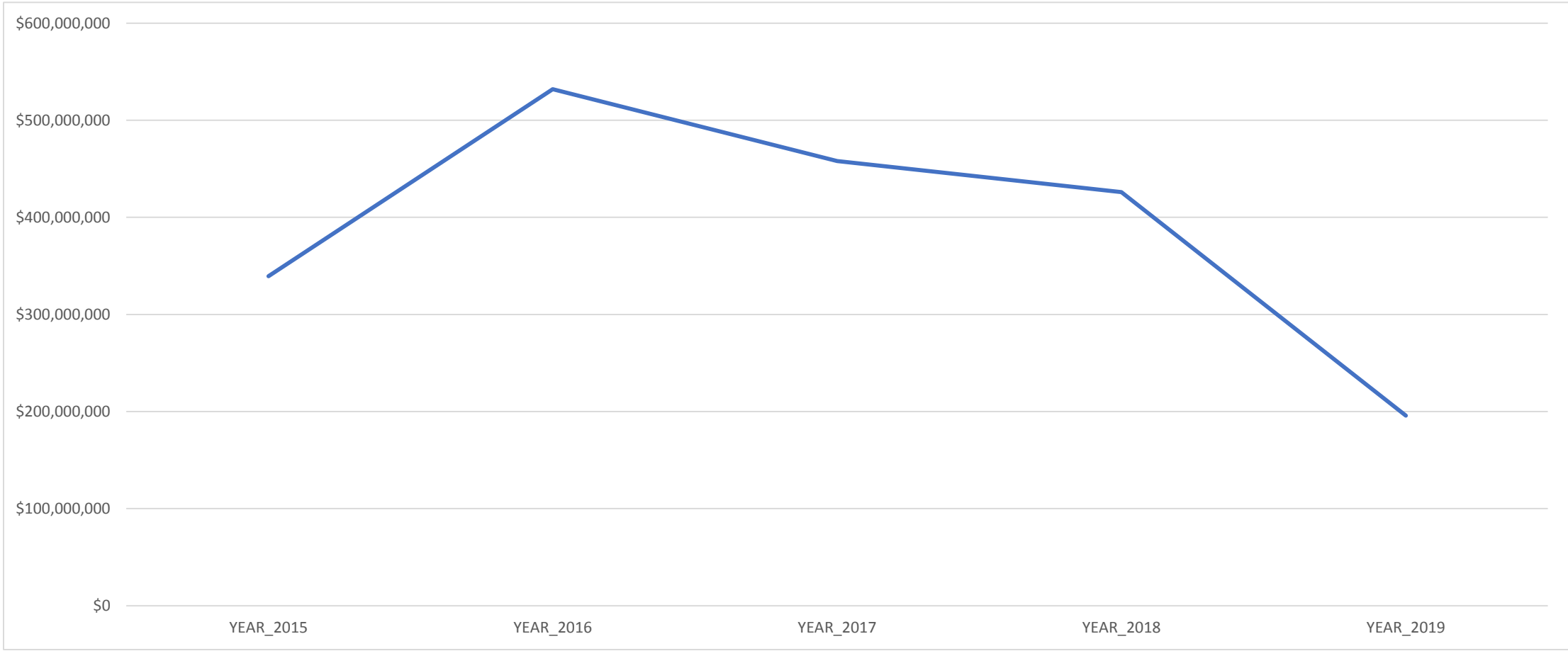

Our REMI Model

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- Four regions:
  - Madera County
  - Fresno County
  - Merced County
  - Rest-of-California
- 70 sectors

County	Median Household Income (2016)	Rank (of 58)
Santa Clara County	$101,173	1
Marin County	$100,310	2
San Mateo County	$98,546	3
San Francisco County	$87,701	4
.	.	.
California	$63,783	N/A
.	.	.
Fresno County	$45,963	42
Madera County	$45,742	43
Shasta County	$45,582	44
Merced County	$44,397	45

Our REMI Study Area

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Manipulating the Input Data

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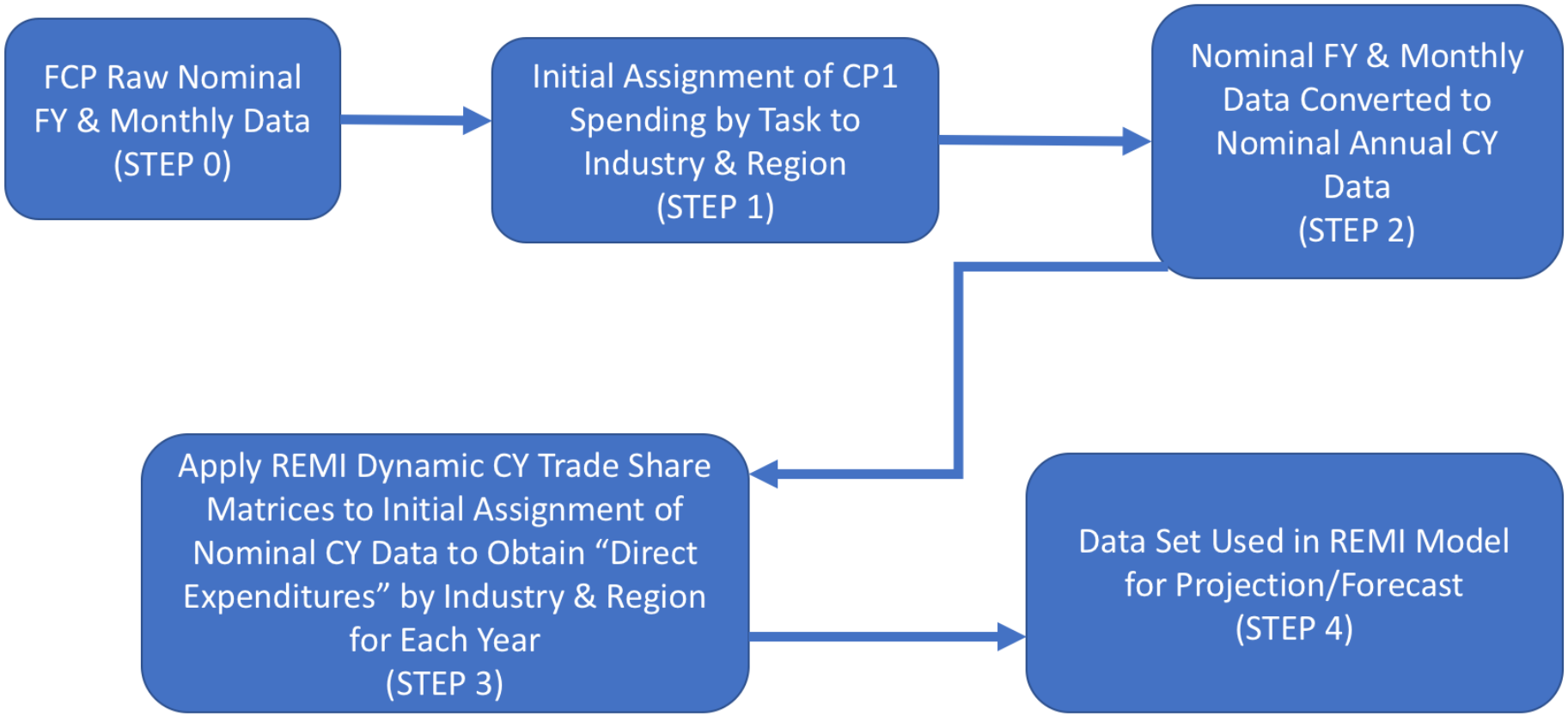

Descriptions of Base Case and Alternative Modeling Estimates

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Input Dataset	Type of Expenditure Values	Description
Base Case	Nominal	Spending adjusted by Dynamic Trade Shares
Raw FCP Case	Nominal	Unadjusted FCP data
Base Case Real 1%	Real	Real base case spending assuming 1% inflation in 2018-2019
Base Case Real 2.5%	Real	Real base case spending assuming 2.5% inflation in 2018-2019
Expenditure-equivalent Transfer Payments	Nominal	Identical expenditures to Base Case all assumed to be transfer payments

Raw REMI Model Employment Forecasts

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Additional Jobs																
Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**Totals**
All Regions	5,022	8,538	8,260	7,653	3,819	421	-185	-469	-536	-477	-353	-214	-82	29	113	31,539
Merced	32	57	53	50	28	7	1	-2	-3	-3	-3	-2	-1	0	1	215
Madera	613	1,132	1,350	1,435	692	36	-27	-56	-63	-59	-50	-39	-27	-18	-10	4,909
Fresno	2,150	3,649	4,082	3,903	1,996	268	16	-107	-147	-139	-105	-62	-19	18	47	15,550
RoCA	2,227	3,701	2,775	2,266	1,104	110	-175	-304	-322	-276	-196	-111	-34	29	74	10,868

Overall full-time equivalent employment for base case and each alternative case

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			Aggregate Job-Years Estimate	
Input Dataset	Type of Expenditure Values	Description	FTE Adjustment Factor 0.80	FTE Adjustment Factor 0.83
Base Case	Nominal	Spending adjusted by Dynamic Trade Shares	25,231.2	26,177.4
Raw FCP Case	Nominal	Unadjusted FCP data	29,214.4	30,309.9
Base Case Real 1%	Real	Real base case spending assuming 1% inflation in 2018-2019	27,178.4	28,197.6
Base Case Real 2.5%	Real	Real base case spending assuming 2.5% inflation in 2018-2019	26,776.8	27,780.9
Expenditure-equivalent Transfer Payments	Nominal	Identical expenditures to Base Case all assumed to be transfer payments	19,891.2	20,637.1
Note. FTE Adjustment factors adjust employment to full-time employment based on alternative industry allocations.				

Cost per Job-Year Estimates Based on Base Case and Alternate Cases

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	Aggregate Job-Years Estimate			
	FTE Adjustment Factor 0.80	FTE Adjustment Factor 0.83		Cost per Job-Year
Base Case	25,231.2	26,177.4		$105,193-$101,391
Raw FCP Case	29,214.4	30,309.9		$90.850-$87,567
Base Case Real 1%	27,178.4	28,197.6		$97,658-$94,127
Base Case Real 2.5%	26,776.8	27,780.9		$99,121-$95,538
Expenditure-equivalent Transfer Payments	19,891.2	20,637.1		$133,433-$128,611

Steel frame that will be part of a poured concrete pillar for the San Joaquin River Viaduct

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Graduation ceremonies for a Pre-Apprenticeship Training program in Modesto

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Blake Konczal, CEO of the Fresno Workforce Investment Board, speaks at graduation ceremonies for the Pre-Apprenticeship Training program in Modesto. Konczal explained that the graduates are well on their way to becoming successful apprentices in a variety of construction trades where salaries start at about $18 per hour

Groundbreaking for future home of Modern Custom Fabrication

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To Download the Report

http://transweb.sjsu.edu/research/Measuring-Economic-Impact-High-Speed-Rail-Construction-California-and-Central-Valley-Region

or

https://tinyurl.com/hsr-impact

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Questions or comments?

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