

Where is the French Silicon Valley?

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1. Introduction

1.1. Background

In 2018, California GDP reached about \$ 2.9 trillions, ranking California as the 5th biggest GDP in the world, ahead of UK (6th) and France (7th).¹ Taking a deeper look, we see that most of California's economic activity is centered around its four major cities: San Francisco, San Jose, Los Angeles and San Diego.² The area located between San Francisco and San Jose, is famously known as the Silicon Valley. This area is the hometown of some of the biggest Tech companies in the world: Google, Apple and Facebook.

What does make this place so special? Several researchers have tried to answer this trillion-dollar question.

In 1994, UC Berkeley Professor AnnaLee Saxenian compared the Silicon Valley to the Boston area known as Route 128, trying to understand what are the key features explaining Silicon Valley success.³ One of her findings was that the clustering of certain types of companies and institutions such as university in a given area does not by itself explain the success of Silicon Valley.⁴ The comparison with Route 128 area around Boston was interesting because, like Silicon Valley, it was the home of prestigious university (Harvard, MIT) and had a lot of technology advanced companies (Digital Equipment Corp., Apollo Computer) but as it turned out, it wasn't as successful in term of startup creation and growth.

Subsequent studies pointed out others Silicon Valley competitive advantages such as: spirit of cooperation, risk-taking culture, great talent attraction, cultural diversity, nice living environment, top-notch universities and research centers, etc.^{5,6} Based on these findings, policymakers around the world have been trying to replicate Silicon Valley model of success. Consequently, the concept of Startup Ecosystem has emerged and is defined as people, startups in their various stages and various types of organizations in a location (physical or virtual), interacting as a system to create and scale new startup

¹ [LinkedIn](#), [Github](#)

companies.⁷ Some reports compare on a regular basis the various Startup ecosystem in the world but by far Silicon Valley remains on the top spot.⁸

In this study, we will focus on the comparison of the major French Startup Ecosystem with Silicon Valley and Boston area.

In June 2018, during the inaugural speech of Station F in Paris, French President Emmanuel Macron stated that France was to become a “startup Nation”.⁹ In addition to the recent opening of the new start-up incubator Station F in Paris, France has been updating its ecosystem for the last 10 years to make it more startup-friendly both for entrepreneurs and investors.¹⁰ Among the key initiatives in favor of startups, we can highlight the creation of the FrenchTech label,¹¹ the Public Investment Bank¹² (Bpifrance) and the research tax-credit¹³ (CIR).

All of these initiatives have deeply impacted the French startup scene and today, most of the major French cities have promising local startup ecosystems. It is a great time to take a deeper look at those startup ecosystems and try to understand how they compare to Silicon Valley.

1.2. Problem

The question that this study tries to answer is: “Where is the French Silicon Valley?”, that-is-to-say which French city has the closest startup ecosystem to the one of the Silicon Valley.

Among the several possible approaches, we choose to explore the geographical clustering of specific type of companies and organizations such as universities in specific areas centered around 13 major French cities and two US area: Silicon Valley on the west coast and Boston area (Route 128) on the east coast.

Using Foursquare Places API geo dataset, we will try to characterize each of these startup ecosystems and compare them through modelling (K-means clustering, linear regression).

1.3. Interest

The result of this data analysis will be of great interest for those who want to better understand the startup landscape in France. Several uses case for this analysis could be considered:

- Local development policymakers will be interested to benchmark how their local startup ecosystem compare to other in France and in the US,
- Startup investors will be interested to identify which startup ecosystem offer the best investing opportunities,
- Startup founder will be interested to know where the best startup ecosystems are to help them potentially chose where to create their startup.

2. Data acquisition and preparation

2.1. Data sources

2.1.1. Foursquare Places API

Foursquare is a location technology company that publish apps enabling their users to check in and leaves comment about places they visit.¹⁴ As a result, they developed over the years one of the biggest places database with more than 105 millions places labeled in more than 300 categories with corresponding address, tips, photos, etc.

In april 2016, Foursquare CEO Jeff Glueck predicted that Chipotle's sales will be down nearly 30% by the next quarter based on the data analysis of their place database.¹⁵ Developpers around the world can also access part of these data trough their Foursquare Places API.¹⁶ Several tiers are available.

Data used in this study were accessed through a Personal Free account with the following restrictions:

- 105M places
- 2 Photos & 2 Tips per Venue
- 2 Queries per Second (QPS)
- 1 App per Account
- 99,500 Regular Calls / Day
- 500 Premium Calls / Day

Based on these restrictions, we chose to focus our analysis on the number of places in selected categories for each of the 15 startup ecosystems.

2.1.2. List of startup ecosystems

The list of French cities selected for this study is as follows: Bordeaux, Clermont-Ferrand, Grenoble, Lille, Lyon, Marseille Aix-en-provence, Montpellier, Nantes, Nice Sophia Antipolis, Paris, Rennes, Strasbourg and Toulouse.

These 13 major French cities were selected according to two articles which listed the major startup ecosystem in France in 2018.^{17,18} Noteworthy, most of these cities are also accredited as part of FrenchTech label, which is a good indicator of the level of maturity of the corresponding local startup ecosystems.¹⁹

Obviously, Silicon Valley was added as main the reference point for the best Startup Ecosystem in the world. Boston area (Route 128) was also added as a reference point, based on the original article from UC Berkeley Professor AnnaLee Saxenian.^{3,4}

2.2. Data preparation

Data were acquired and prepared using one jupyter notebook for each of the 15 startup ecosystems studied here. These notebooks are available on [github](#).²⁰

Silicon Valley (SV) is not centered in a specific city. In fact, SV extends from San Fransisco in the North to San Jose in the South. As a result, we chose Palo Alto, CA as the approximate center of the area and asked Foursquare API for the list of up to 50 cities within a 50 km radius from Palo Alto, CA. The list of places in each of the selected categories was then obtained within a 5 km radius around each of the city in the list for the specific startup ecosystem. Duplicate were dropped.

The process described here-above was repeated for each of the 14 others startup ecosystems and are detailed in the notebooks listed here-after:

- **France:**
 - [Bordeaux](#)
 - [Clermont-Ferrand](#)
 - [Grenoble](#)
 - [Lille](#)
 - [Lyon](#)
 - [Marseille Aix-en-provence](#)
 - [Montpellier](#)
 - [Nantes](#)
 - [Nice Sophia Antipolis](#)
 - [Paris](#)
 - [Rennes](#)
 - [Strasbourg](#)
 - [Toulouse](#)
- **US:**
 - [Boston](#)
 - [Silicon Valley](#)

2.3. Features selection

Foursquare has more than 300 categories.²¹ It goes from Restaurants to Stores and some of theses categories can widely impact any analysis just by their sheer number of places. As a result, after some preliminary data exploration, we had to focus on a close selection of 46 categories that are directly related to the life of startups, that-is-to-say places that constitutes a startup ecosystem.⁷

After data preparation, we got 34,915 places combined in a 46 x 15 dataframe corresponding to the 46 categories and the 15 startup ecosystems. The corresponding jupyter notebook is available [here on github](#).²⁰

The first category selected was Tech Startup as this is the most direct indicator of the activity of a startup ecosystem. We then selected all the services that are required to the common operations of a startup (Financial or Legal Service, Coworking Space, Business Center, etc), categories related to potential academic or research partners of startup (College & University, College Lab, Laboratory, Research Station, etc), categories related to potential industrial partners of startup (Factory, Office, Industrial Estate), categories related to potential governmental partners of startup (Government Building, Capitol Building, City Hall) and categories related to various events and cultural centers that are required for

startup to network and meet potential users, customers and investors (Event Space, Conference, Museum, etc).

All other categories were dropped either because the number of place in the corresponding category was null or negligible, or because, to the opposite, the sheer number was hindering any insightful conclusions (*e.g.* the number of French restaurant in France is not really helpful when trying to compare French startup ecosystem to US ones).

One of the most problematic part of the feature selection was the need to drop two key places categories which were Bank and Lawyer. One may think that these two categories are closely related to a startup ecosystem and thus must be include in the analysis. However, the preliminary data analysis carried out with these two categories yielded to inconclusive results. These two categories both correspond to large number of places in each of the startup ecosystem studied and were almost always in the top 10 categories with the most places. While counterintuitive, we ended up deciding to drop these two categories and after this we were able to compare more easily the various ecosystems. This point will be discussed in more details in the Results and Discussion part of the present report.

Bibliography

- ¹ "Comparison between U.S. states and sovereign states by GDP," Wikipedia, [Online]. Available: https://en.wikipedia.org/wiki/Comparison_between_U.S._states_and_sovereign_states_by_GDP. [Accessed 29 03 2019].
- ² L. M. SEGARRA, "California's Economy Is Now Bigger Than All of the U.K.," Fortune, 5 May 2018. [Online]. Available: <http://fortune.com/2018/05/05/california-fifth-biggest-economy-passes-united-kingdom/>. [Accessed 29 03 2019].
- ³ J. Fox, "What Still Makes Silicon Valley So Special," 05 12 2014. [Online]. Available: <https://hbr.org/2014/12/what-still-makes-silicon-valley-so-special>. [Accessed 29 03 2019].
- ⁴ A. Saxenian, «Silicon Valley Versus Route 128,» 1 02 1994. [En ligne]. Available: <https://www.inc.com/magazine/19940201/2758.html>. [Accès le 29 03 2019].
- ⁵ K. AMADEO, «Silicon Valley, America's Innovative Advantage,» 20 11 2018. [En ligne]. Available: <https://www.thebalance.com/what-is-silicon-valley-3305808>. [Accès le 30 03 2019].
- ⁶ A. Crompton, "What's Special About Silicon Valley?," 22 02 2018. [Online]. Available: <https://medium.com/swlh/silicon-valley-e2a3cb55f1ee>. [Accessed 30 03 2019].
- ⁷ "Startup ecosystem," Wikipedia, [Online]. Available: https://en.wikipedia.org/wiki/Startup_ecosystem.
- ⁸ R. Empson, "Startup Genome Ranks The World's Top Startup Ecosystems: Silicon Valley, Tel Aviv & L.A. Lead The Way," Techcrunch, 2012. [Online]. Available: <https://techcrunch.com/2012/11/20/startup-genome-ranks-the-worlds-top-startup-ecosystems-silicon-valley-tel-aviv-l-a-lead-the-way/>. [Accessed 30 03 2019].
- ⁹ L. Alderman, "Macron Vowed to Make France a 'Start-Up Nation.' Is It Getting There?," The New York Times, 23 05 2018. [Online]. Available: <https://www.nytimes.com/2018/05/23/business/emmanuel-macron-france-technology.html>. [Accessed 30 03 2019].
- ¹⁰ L. Alderman, B. Morenne, E. Peltier "Why France Is Taking a Lesson in Culture From Silicon Valley," The New York Times, 29 06 2017. [Online]. Available: <https://www.nytimes.com/2017/06/29/business/station-f-tech-incubator-france.html>. [Accessed 30 03 2019].
- ¹¹ FrenchTech, [Online]. Available: <https://www.lafrenchtech.com/en>. [Accessed 30 03 2019].
- ¹² "Bpifrance, la banque des entrepreneurs," Bpifrance, [Online]. Available: <https://www.bpifrance.fr>. [Accessed 30 03 2019].
- ¹³ "Crédit d'impôt recherche (CIR)," Service Public Pro, 21 01 2019. [Online]. Available: <https://www.service-public.fr/professionnels-entreprises/vosdroits/F23533>. [Accessed 30 03 2019].
- ¹⁴ "Foursquare (company)," Wikipedia, [Online]. Available: [https://en.wikipedia.org/wiki/Foursquare_\(company\)](https://en.wikipedia.org/wiki/Foursquare_(company)). [Accessed 30 03 2019].
- ¹⁵ J. Glueck, "Foursquare Predicts Chipotle's Q1 Sales Down Nearly 30%; Foot Traffic Reveals the Start of a Mixed Recovery," Medium, 12 04 2016. [Online]. Available: <https://medium.com/foursquare-direct/foursquare-predicts-chipotle-s-q1-sales-down-nearly-30-foot-traffic-reveals-the-start-of-a-mixed-78515b2389af>. [Accessed 30 03 2019].
- ¹⁶ "Places API," Foursquare, [Online]. Available: <https://developer.foursquare.com/places-api>. [Accessed 30 03 2019].

¹⁷ N. Leon, "Où est la Silicon Valley française ? Cap au Nord," Welcome to the Jungle, 28 06 2018. [Online]. Available: <https://www.welcometothejungle.co/articles/silicon-valley-francaise-nord>. [Accessed 30 03 2019].

¹⁸ N. Leon, "Où est la Silicon Valley française ? Cap au Sud," Welcome to the Jungle, 4 07 2018. [Online]. Available: <https://www.welcometothejungle.co/articles/tech-silicon-valley-francaise-province-sud>. [Accessed 30 03 2019].

¹⁹ "French Tech," Wikipedia, [Online]. Available: https://en.wikipedia.org/wiki/French_Tech. [Accessed 30 03 2019].

²⁰ M. Sonnati, "where_is_the_french_silicon_valley," Github, [Online]. Available: https://github.com/MattSonnati/where_is_the_french_silicon_valley. [Accessed 30 03 2019].

²¹ "Venue Categories," Foursquare, [Online]. Available: <https://developer.foursquare.com/docs/resources/categories>. [Accessed 30 03 2019].