

# **Predicting what are the best places to live in Houston when you start a new life**

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## **1. Introduction**

Houston is the fourth largest city in the United States of America and one of the most diverse cities in the world.

When a person immigrates to the United States and lives in Houston for the first time, they must go through a process of adaptation and generally must begin to rebuild their life from scratch.

This process implies not having the privileges that other people have, such as having a car, having a credit history, among other things.

The data of the neighborhoods become more important at the moment that they provide information on the different amenities that do not present a significant cost of mobilization for their residents and where they consequently raise their quality of life.

### **1.2 Problem**

As Houston is a city with many neighborhoods, the data collected will focus on the number of amenities found in the different super neighborhoods. This will allow the person to be moved a better overview of the amenities available in a larger area, to determine which of these super neighborhoods offers more amenities and therefore the cost of mobilization is lower.

The amenities that will be considered will be those that can increase the quality of life of people such as: parks, restaurants, gyms, schools, supermarkets, banks, gas stations, clothing stores.

### **1.3 Interest**

The information should interest people with different profiles but will mainly be focused on people who are thinking of moving to Houston or people who want to start a new life in a different area of the city.

## **2. Data acquisition**

### **2.1 Data sources and Data cleaning**

The main source of data is the list of all the super neighborhoods in Houston with their respective latitudes and longitudes. These data were already extracted from different sources, mainly from the Houston city page where all the super neighborhoods are listed:

<https://www.houstontx.gov/superneighborhoods/>

the coordinates were extracted from the Google maps website, and some manually from Bing maps since some super neighborhoods were not in google maps as the government page lists them.

The information has already been collected in [this CSV file](#)

With this information it will be possible to build a data frame that shows the data of each super neighborhood

Out[14]:

|     | NEIGHBORHOOD               | LATITUDE  | LONGITUDE  |
|-----|----------------------------|-----------|------------|
| 0   | FOURTH WARD                | 29.759772 | -95.384385 |
| 1   | SECOND WARD                | 29.751404 | -95.335659 |
| 2   | DOWNTOWN                   | 29.759464 | -95.370603 |
| 3   | CLINTON PARK TRI-COMMUNITY | 29.747192 | -95.269902 |
| 4   | GREATER UPTOWN             | 29.745115 | -95.465307 |
| ... | ...                        | ...       | ...        |
| 83  | BRIAR FOREST               | 29.747880 | -95.571911 |
| 84  | NEARTOWN - MONTROSE        | 29.742768 | -95.399474 |
| 85  | MEMORIAL                   | 29.772691 | -95.575681 |
| 86  | SPRING BRANCH WEST         | 29.790836 | -95.546277 |
| 87  | ADDICKS PARK TEN           | 29.813039 | -95.644582 |

## 2.3 Feature selection

Together with the information of the 88 super neighborhoods and their coordinates, the Foursquare API will be used to build a data frame that allows to list the amenities for each super neighborhood.

These amenities will be filtered by amenities focused on improving the quality of life, their main categories being those that contain:

**Restaurant, Gym, Park, School, Trail, River, Hospital, Supermarket, Shop**

## Data frame during data cleaning

### Data filtered by venue categories

Out[29]:

|      | Neighborhood       | Neighborhood Latitude | Neighborhood Longitude | Venue                       | Venue Latitude | Venue Longitude | Venue Category        |
|------|--------------------|-----------------------|------------------------|-----------------------------|----------------|-----------------|-----------------------|
| 0    | FOURTH WARD        | 29.759772             | -95.384385             | Eleanor Tinsley Park        | 29.761440      | -95.379271      | Park                  |
| 1    | FOURTH WARD        | 29.759772             | -95.384385             | Lucio's BYOB                | 29.758326      | -95.385591      | Bar                   |
| 2    | FOURTH WARD        | 29.759772             | -95.384385             | Buffalo Bayou Park          | 29.762068      | -95.391626      | Park                  |
| 3    | FOURTH WARD        | 29.759772             | -95.384385             | Paper Street Crossfit       | 29.757435      | -95.385846      | Gym                   |
| 4    | FOURTH WARD        | 29.759772             | -95.384385             | Buffalo Bayou Walk          | 29.762177      | -95.375844      | Trail                 |
| ...  | ...                | ...                   | ...                    | ...                         | ...            | ...             | ...                   |
| 5098 | SPRING BRANCH WEST | 29.790836             | -95.546277             | Hotel Sorella CITYCENTRE    | 29.780198      | -95.561398      | Hotel                 |
| 5099 | ADDICKS PARK TEN   | 29.813039             | -95.644582             | Bill Archer Dog Park        | 29.817540      | -95.647513      | Dog Run               |
| 5100 | ADDICKS PARK TEN   | 29.813039             | -95.644582             | Bear Creek Community Center | 29.816189      | -95.640549      | Government Building   |
| 5101 | ADDICKS PARK TEN   | 29.813039             | -95.644582             | Haunted Road                | 29.814805      | -95.645856      | Outdoors & Recreation |
| 5102 | ADDICKS PARK TEN   | 29.813039             | -95.644582             | FATBOY COOKERS TENT         | 29.817060      | -95.639389      | BBQ Joint             |

5103 rows x 7 columns

### Number of venues by Neighborhood under the filtered venue categories

Out[32]:

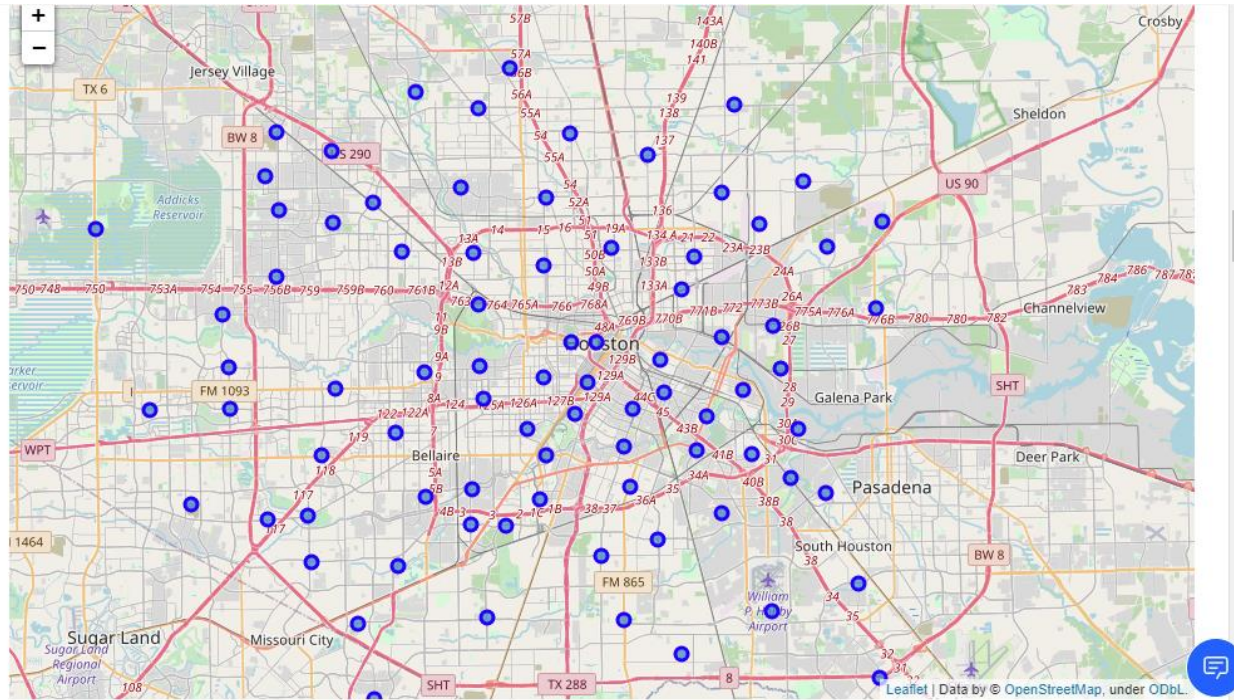
|    | index | NEIGHBORHOOD                 | Venue |
|----|-------|------------------------------|-------|
| 0  | 37    | GULFTON                      | 59    |
| 1  | 55    | MID WEST                     | 57    |
| 2  | 35    | GREENWAY / UPPER KIRBY AREA  | 55    |
| 3  | 29    | GREATER HEIGHTS              | 55    |
| 4  | 76    | SPRING BRANCH WEST           | 52    |
| 5  | 53    | MEMORIAL                     | 49    |
| 6  | 60    | NEARTOWN - MONTROSE          | 48    |
| 7  | 56    | MIDTOWN                      | 48    |
| 8  | 1     | AFTON OAKS / RIVER OAKS AREA | 48    |
| 9  | 83    | WESTCHASE                    | 47    |
| 10 | 7     | BRIAR FOREST                 | 46    |

## 3. Exploratory Data Analysis

As a starting point to determine the best neighborhoods, only neighborhoods with more than 20 Venues in a 2000-meter radius were considered, using the Foursquare API as a data source.

As a first step, a map was generated to observe all the super neighborhoods in Houston and take this as a basis to further segregate the data.

### 3.1 Houston super neighborhoods map

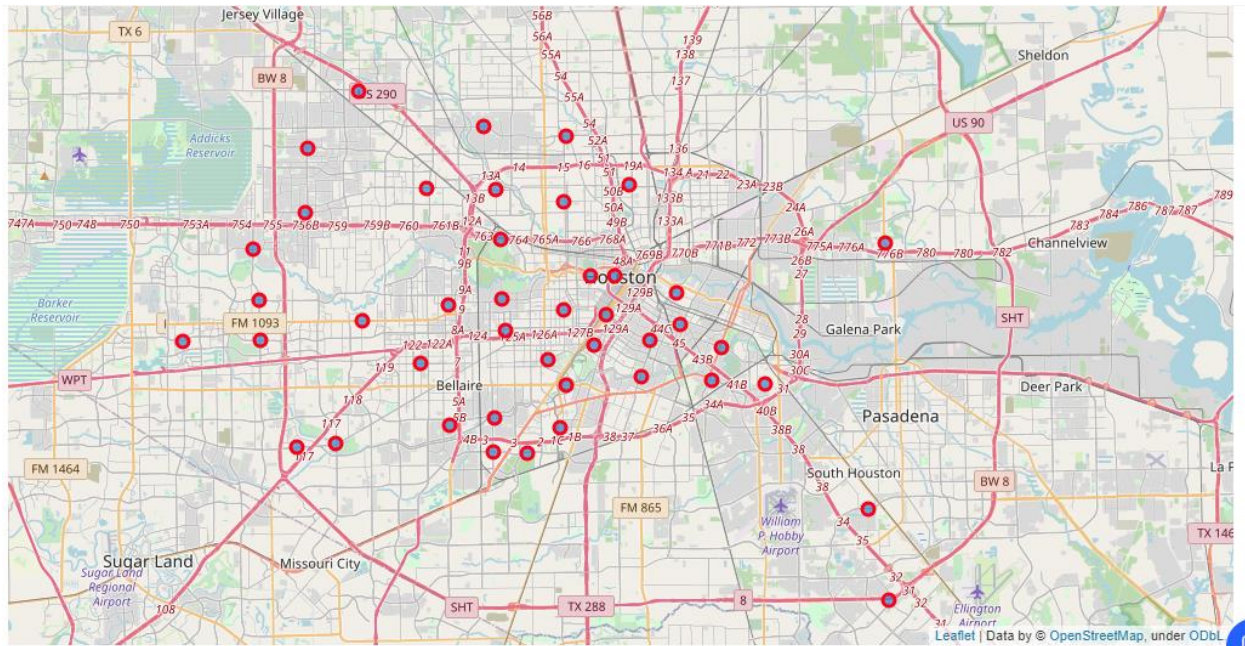


Once the data of all the super neighborhoods was had, the foursquare API was used to obtain the venues associated with each neighborhood and this data was filtered by only the categories that allow to increase the quality of life.

In addition, the number of venues for each neighborhood belonging to these categories was counted, in this way 45 neighborhoods were obtained that can be seen in the following map

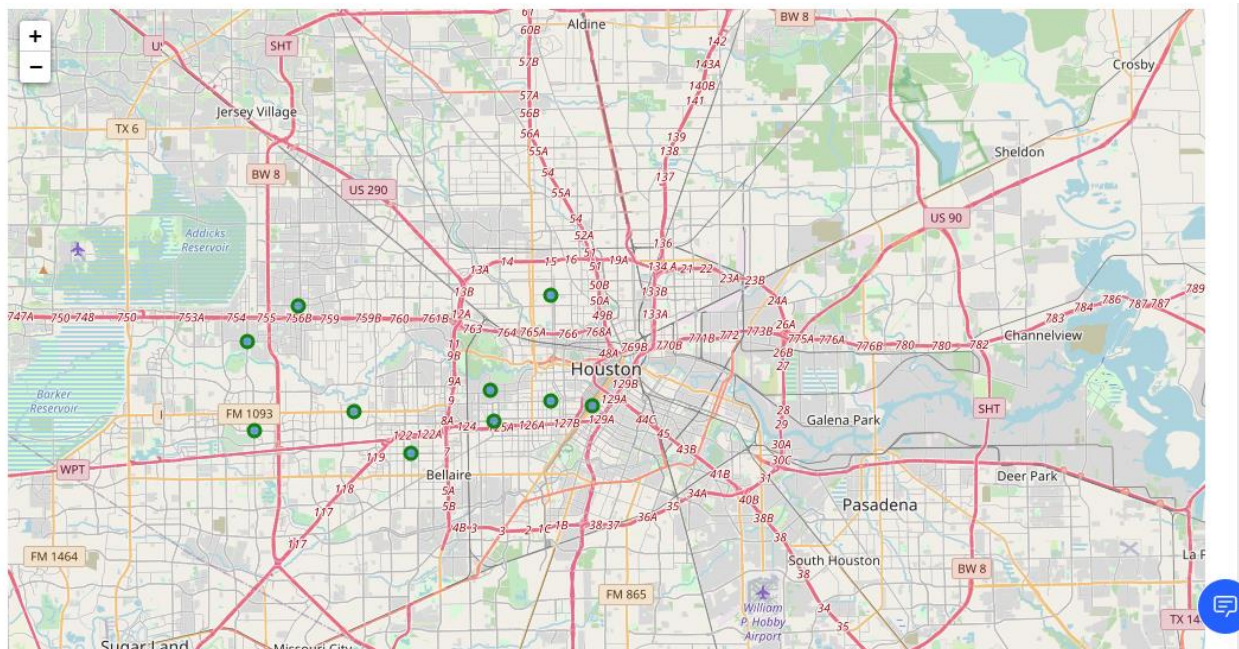


### 3.2 Houston super neighborhoods with more than 20 venues



If we segregate this information even more, we can see the ten neighborhoods with the most venues.

### 3.3 Top 10 Houston super neighborhoods with more venues



## 4. Results

After the analysis we can see as a result that the best 10 neighborhoods to live in Houston when starting a new life are the following:

| NEIGHBORHOOD                 | Venue | LATITUDE  | LONGITUDE  |
|------------------------------|-------|-----------|------------|
| GULFTON                      | 59    | 29.716575 | -95.480770 |
| MID WEST                     | 57    | 29.737498 | -95.513982 |
| GREENWAY / UPPER KIRBY AREA  | 55    | 29.732596 | -95.433009 |
| GREATER HEIGHTS              | 55    | 29.796099 | -95.399876 |
| SPRING BRANCH WEST           | 52    | 29.790836 | -95.546277 |
| MEMORIAL                     | 49    | 29.772691 | -95.575681 |
| NEARTOWN - MONTROSE          | 48    | 29.742768 | -95.399474 |
| MIDTOWN                      | 48    | 29.740742 | -95.375769 |
| AFTON OAKS / RIVER OAKS AREA | 48    | 29.748030 | -95.435028 |
| WESTCHASE                    | 47    | 29.727917 | -95.571579 |

These results were based on the number of venues that are in a close radius, so the cost of mobilization would be better. It is important to keep in mind that only venues were considered within the categories that allow a better quality of life, so some such as bars and clubs were discarded.

## 5. For Discussion

Although it is true that there are many more factors to determine the quality of life, when selecting a house, other factors that are very typical of Houston should be kept in mind, within these we can mention the following:

**-Noisy places:** It should be kept in mind that in Houston there are large trains and highways, so if you live closer to where the trains pass or the large highways, the noise level can be much higher and will impact the quality of life of the people who live there, the same applies if you live remarkably close to clubs or bars.

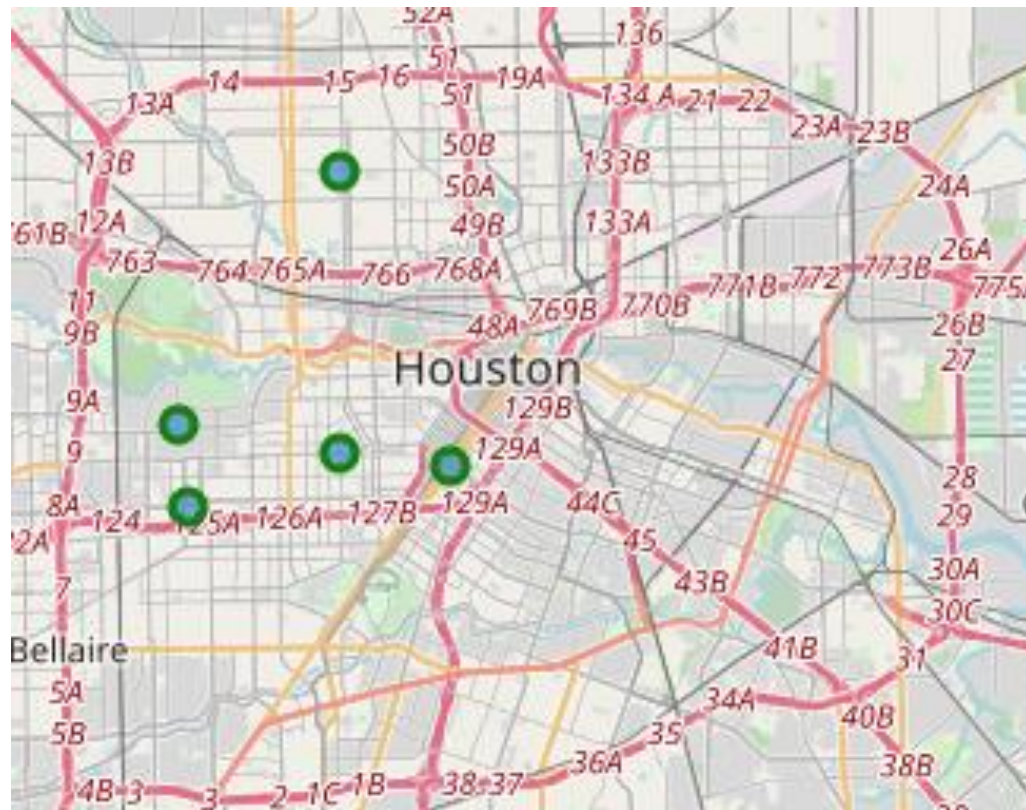
**-Traffic:** As Houston is a city with many habitants, there are several areas that have heavy traffic, so the amount of time a person spends from home to work must be considered to measure the quality of life.

**-Budget:** Although several super neighborhoods have been mentioned as the best to live in Houston, not all of them can be accessible for all budgets, so it is important to consider the budget that you need for rent or buy.

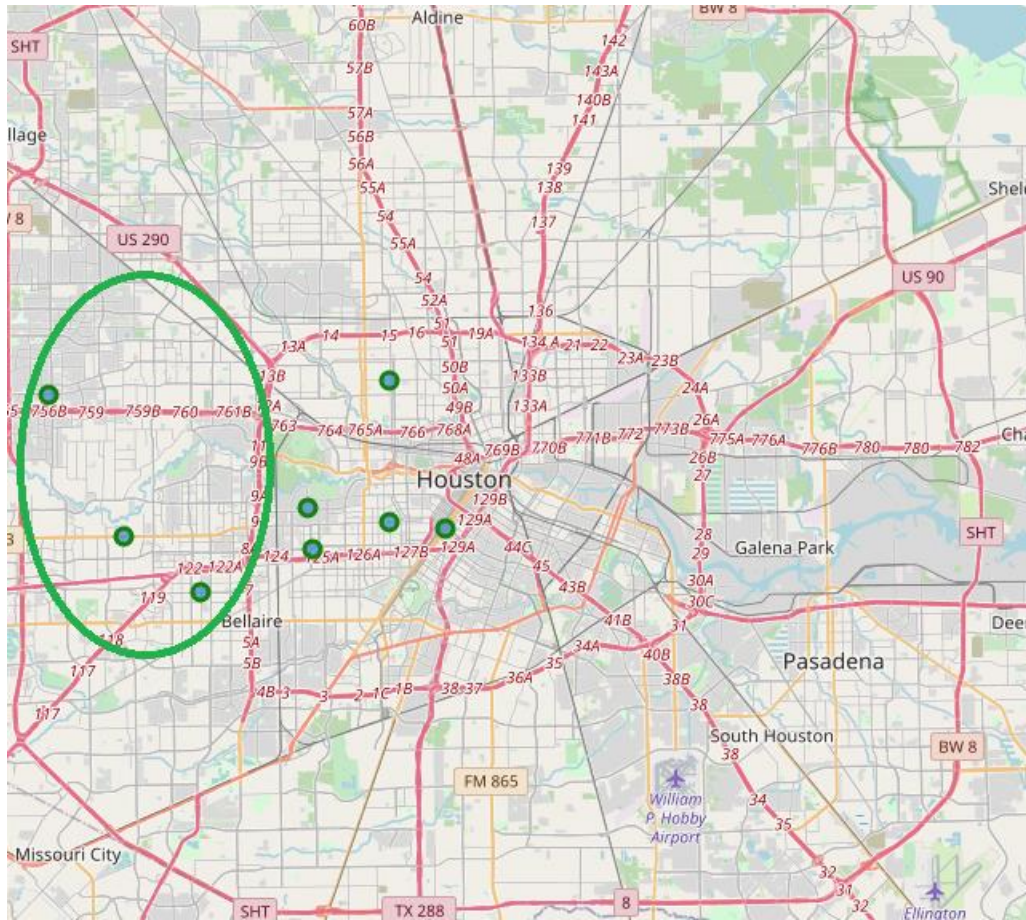


11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847

By analyzing the data of each super neighborhood, we can conclude the following:

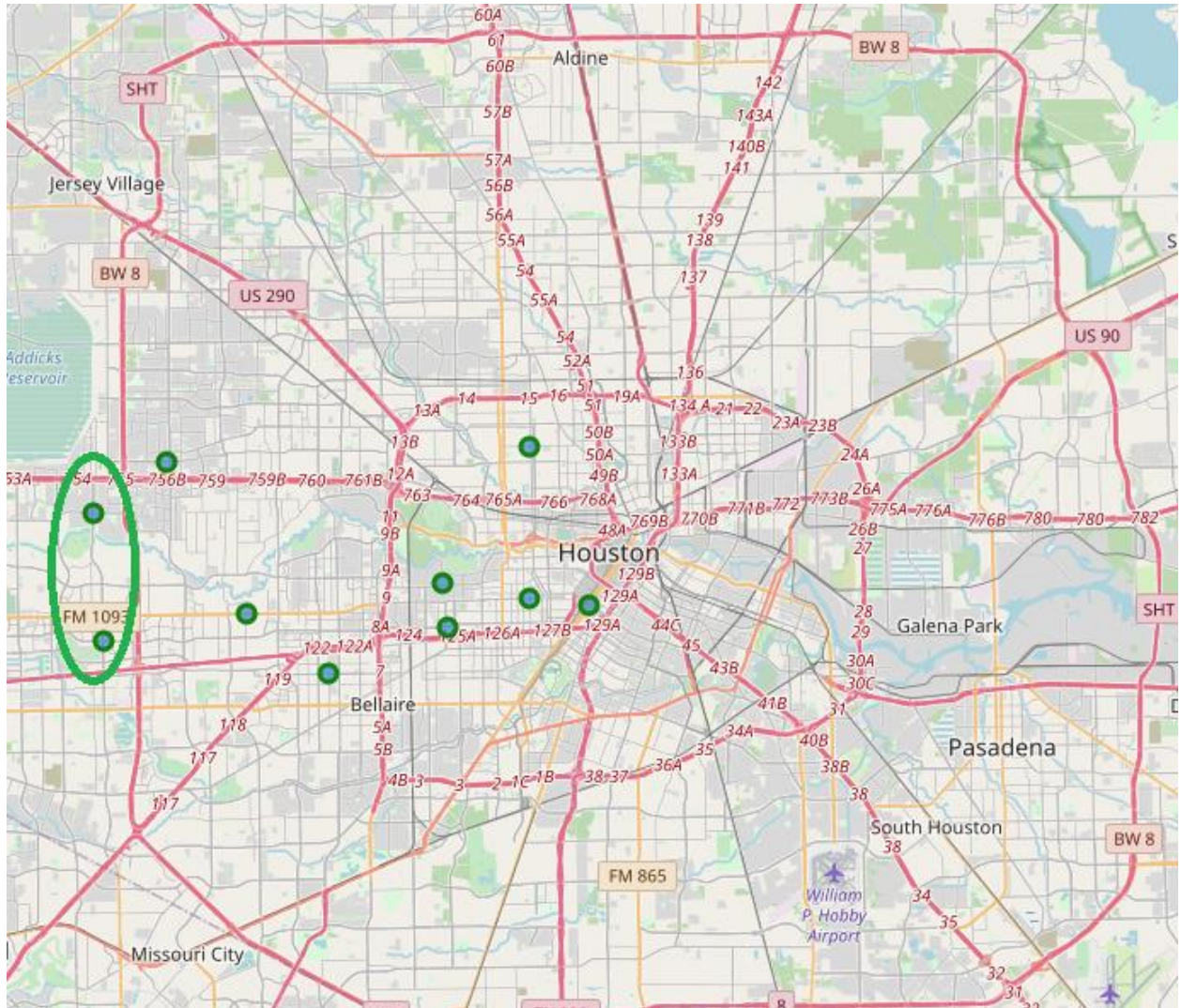


**2. The second-best option is the neighborhoods that are west of the outer loop. With three super neighborhoods.**





3. As the last best option we have two super neighborhoods that are on the outskirts of the outer loop but that are to the west.



If the data provided and the factors mentioned in the discussion section are considered, this report presents a big picture of what to take into account when looking for a home and starting a new life in Houston.