



WATERSHED
PROPERTIES

Recommendations on Short-term Rental Market

Increasing Real Estate Management Profits: Harnessing Data Analytics, Duke University

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July 2016

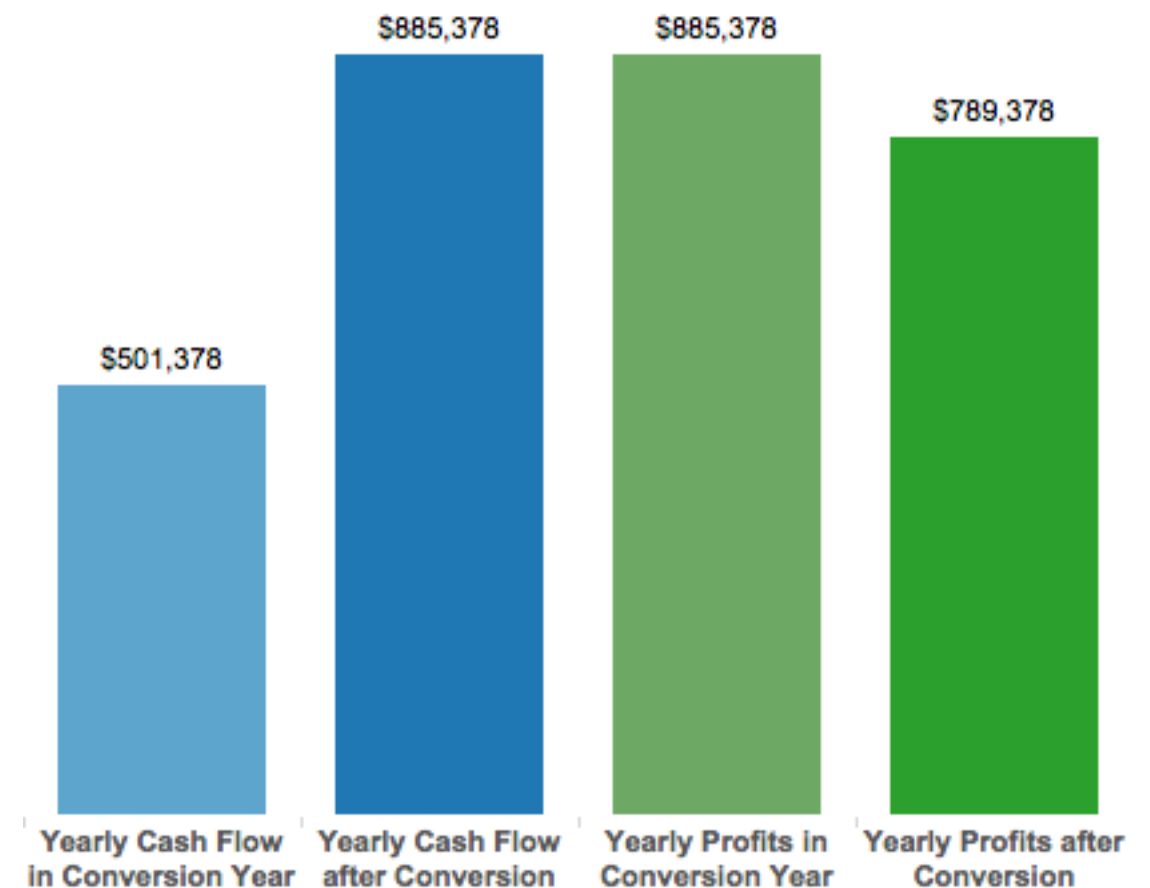
Danqing HUANG
2020-AUG

The Big Question

- **Question:** Should Watershed enter the short-term rental market, with the available capital \$500K?
- **Answer:** YES!
- **Recommendation:**
 1. Convert the **top 16** “profitable” properties in the first year, with the initial cash \$480K (less than \$500K)
 2. If more than \$480k cash flow yield during the first year, convert the **second top 16** “profitable” properties in the second year, with \$480k of the cash flow from the first year.

First Conversion Year — Convert the Top 16 Profitable Properties

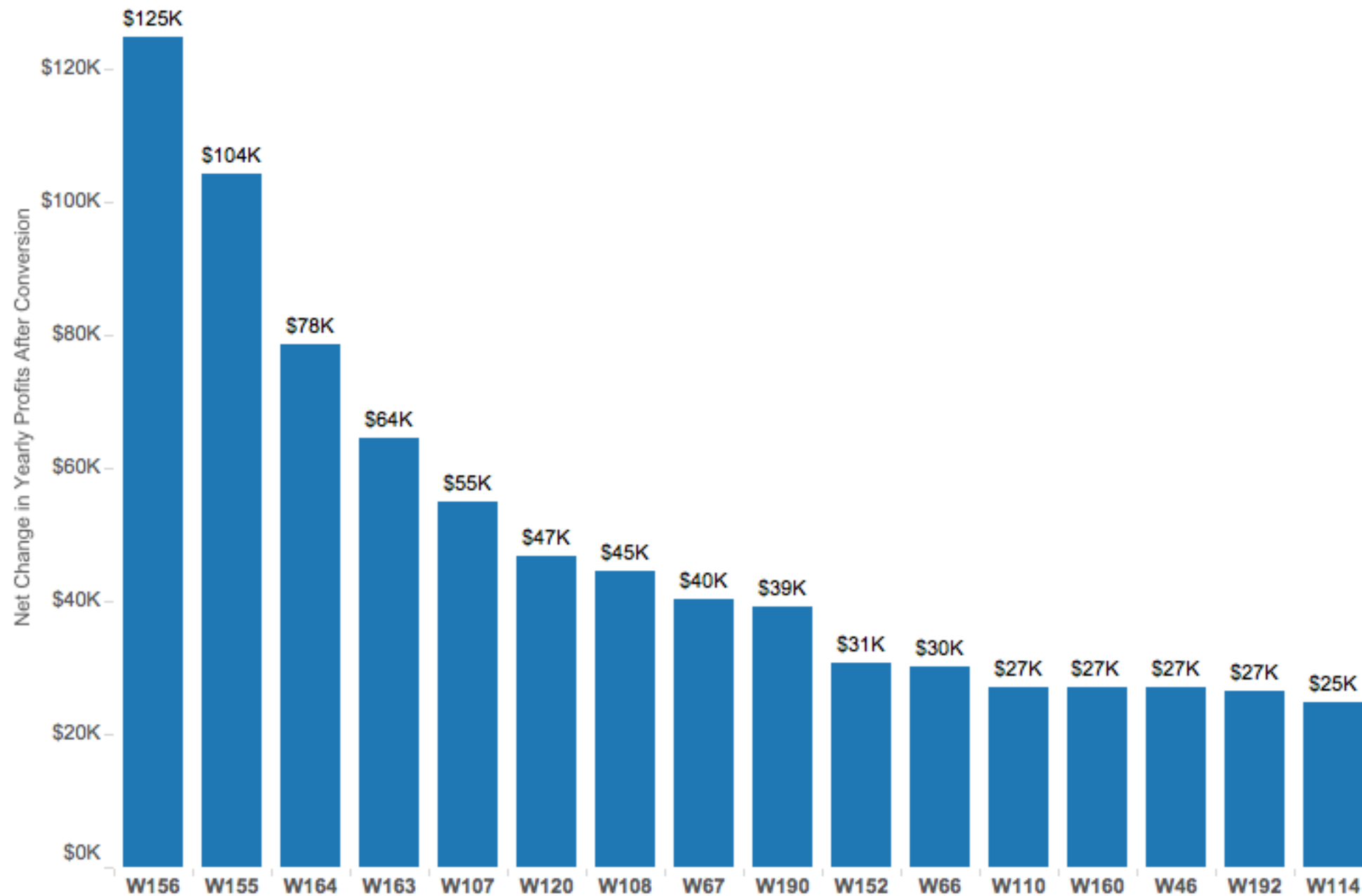
- Total Cash Needed for conversion: \$480K
- Net Change in Yearly Profits: \$885,378 during the first year; \$789,378 every year thereafter.
- Net Change in Yearly Cash Flow: \$501,378 during the first year; \$885,378 every year thereafter.



The Top 16 Properties for the First Conversion

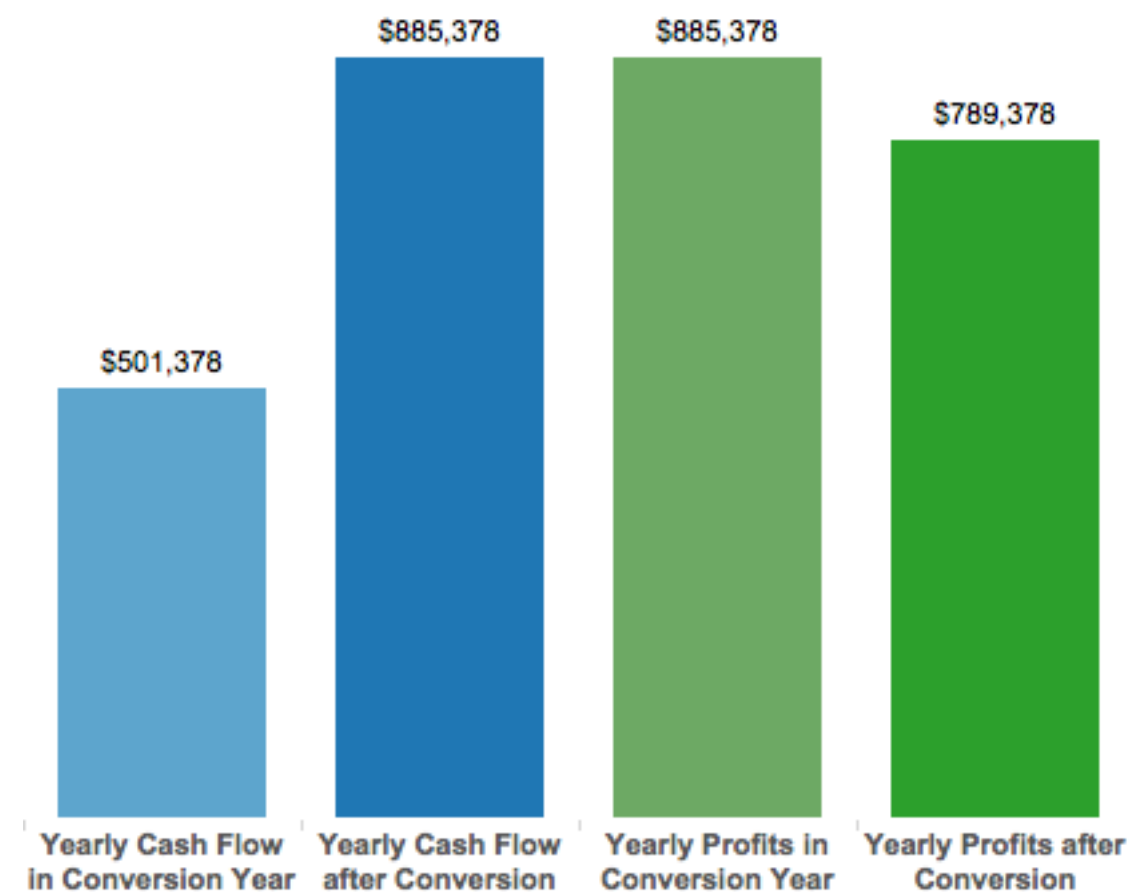
Property ID	City	Net Change in Cash Flow, Conversion Year	Net Change in Cash Flow, Each Year Thereafter	Net Change in Profits, Conversion Year	Net Change in Profits, Each Year Thereafter
W156	Miami	\$106,603	\$130,603	\$130,603	\$124,603
W155	Miami	\$86,018	\$110,018	\$110,018	\$104,018
W164	Miami	\$60,371	\$84,371	\$84,371	\$78,371
W163	Miami	\$46,398	\$70,398	\$70,398	\$64,398
W107	Austin	\$36,983	\$60,983	\$60,983	\$54,983
W120	Austin	\$28,571	\$52,571	\$52,571	\$46,571
W108	Austin	\$26,516	\$50,516	\$50,516	\$44,516
W67	Palo Alto	\$22,184	\$46,184	\$46,184	\$40,184
W190	San Diego	\$21,015	\$45,015	\$45,015	\$39,015
W152	Miami	\$12,530	\$36,530	\$36,530	\$30,530
W66	Palo Alto	\$11,987	\$35,987	\$35,987	\$29,987
W110	Austin	\$9,089	\$33,089	\$33,089	\$27,089
W160	Miami	\$8,942	\$32,942	\$32,942	\$26,942
W46	New York	\$8,927	\$32,927	\$32,927	\$26,927
W192	San Diego	\$8,518	\$32,518	\$32,518	\$26,518
W114	Austin	\$6,727	\$30,727	\$30,727	\$24,727

Yearly Profits After Conversion of the Individual Top 16 Properties



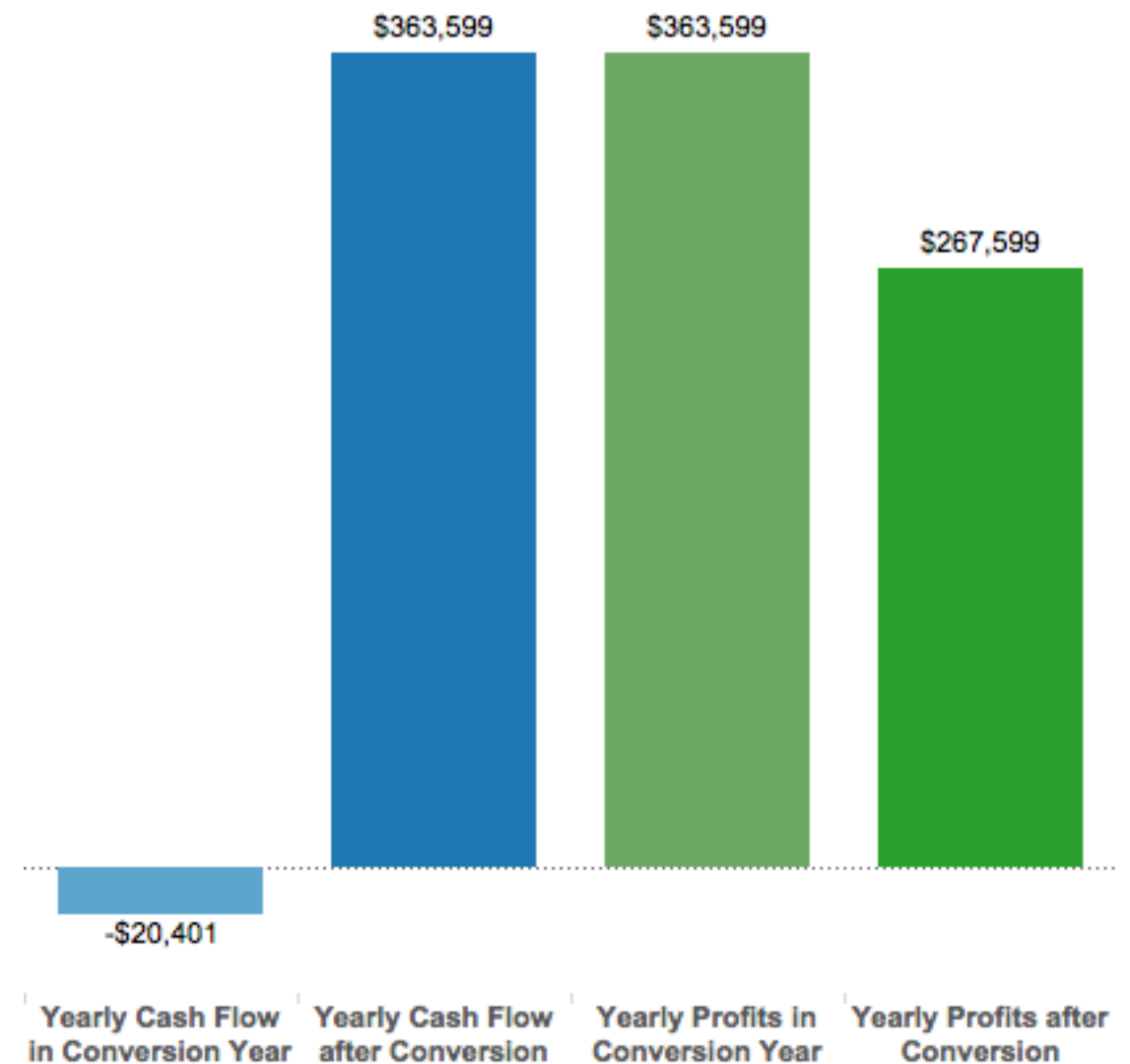
What Next After the First Conversion Year?

- Net Change in Cash Flow during the First Conversion Year: **\$501,378**
- It means we have cash for the conversion of **another set of 16 properties**.
- **Recommendation:** In the second year, convert the next top 16 profitable properties using the cash flow from the first conversion year.



Second Conversion Year — Convert the Next Top 16 Profitable Properties

- Total Cashed Needed for conversion this set of 16 properties: \$480K
- Net Change in Yearly Profits of this set of 16 properties: \$363,599 during the conversion year; \$267,599 every year thereafter.
- Net Change in Yearly Cash Flow of this set of 16 properties: -\$20,401 during the conversion year; \$363,599 every year thereafter.

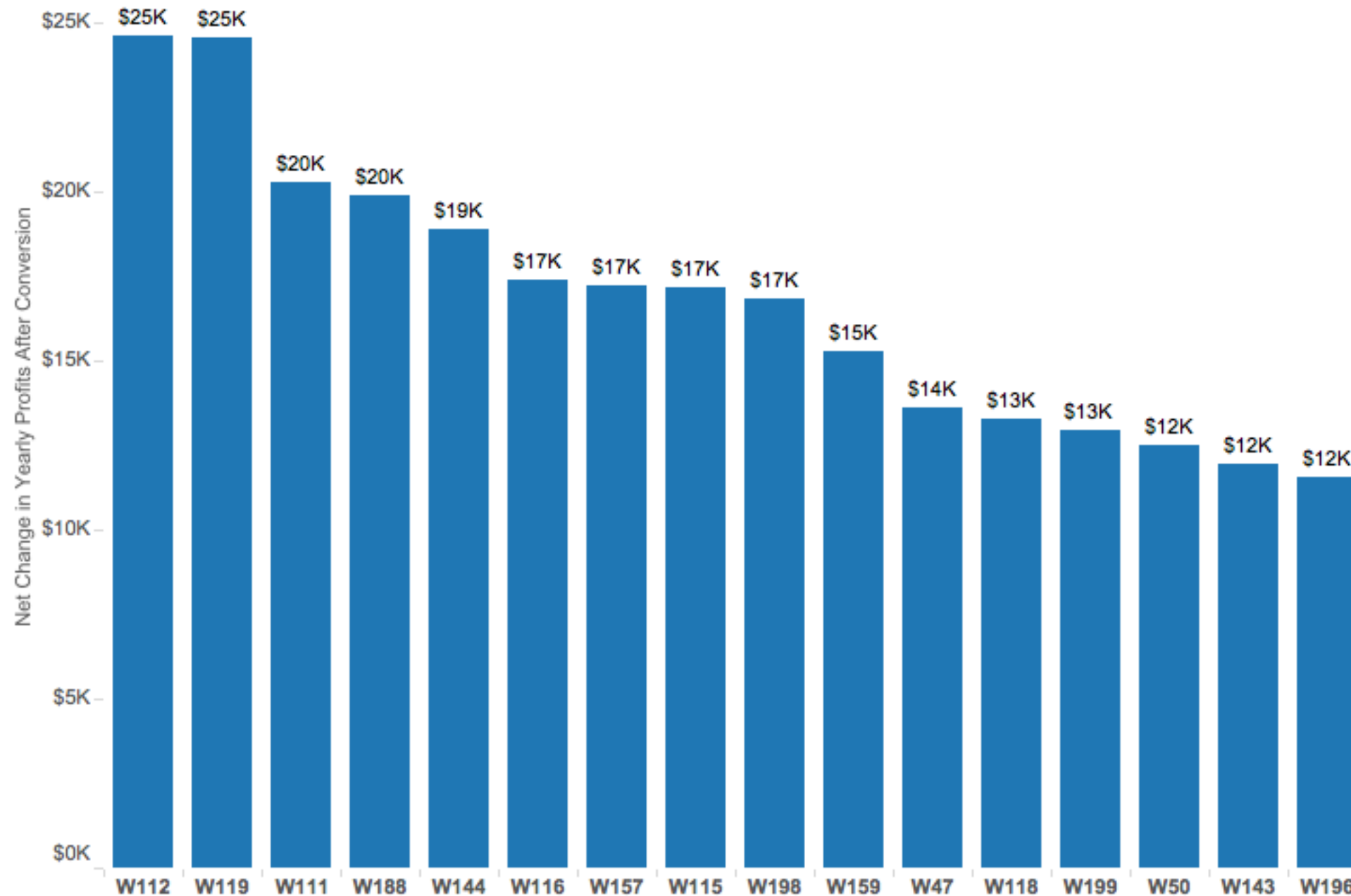


In this second conversion year, the first set of top 16 properties which have been converted last year, in this year, will produce \$789,378 additional profit and \$885,378 additional cash flow.

The Next Top 16 Properties for the Second Conversion

Property ID	City	Net Change in Cash Flow, Conversion Year	Net Change in Cash Flow, Each Year Thereafter	Net Change in Profits, Conversion Year	Net Change in Profits, Each Year Thereafter
W112	Austin	\$6,578	\$30,578	\$30,578	\$24,578
W119	Austin	\$6,556	\$30,556	\$30,556	\$24,556
W111	Austin	\$2,263	\$26,263	\$26,263	\$20,263
W188	San Diego	\$1,870	\$25,870	\$25,870	\$19,870
W144	Denver	\$861	\$24,861	\$24,861	\$18,861
W116	Austin	-\$622	\$23,378	\$23,378	\$17,378
W157	Miami	-\$806	\$23,194	\$23,194	\$17,194
W115	Austin	-\$837	\$23,163	\$23,163	\$17,163
W198	San Diego	-\$1,202	\$22,798	\$22,798	\$16,798
W159	Miami	-\$2,762	\$21,238	\$21,238	\$15,238
W47	New York	-\$4,422	\$19,578	\$19,578	\$13,578
W118	Austin	-\$4,712	\$19,288	\$19,288	\$13,288
W199	San Diego	-\$5,086	\$18,914	\$18,914	\$12,914
W50	New York	-\$5,529	\$18,471	\$18,471	\$12,471
W143	Denver	-\$6,087	\$17,913	\$17,913	\$11,913
W196	San Diego	-\$6,462	\$17,538	\$17,538	\$11,538

Yearly Profits After the Second Conversion of the Second Set of 16 Properties



Cash Flow and Profits with the Two Conversions

- Cash Flow in the First Conversion Year: \$501,378
- Cash Flow in the Second Conversion Year: $\$885,378 - \$20,401 = \$864,977$
- Cash Flow Every Year Thereafter: $\$885,378 + \$363,599 = \$1,248,977$
- Profits in the First Conversion Year: \$885,378
- Profits in the Second Conversion Year: $\$789,378 + \$363,599 = \$1,152,977$
- Profits in the Year Thereafter: $\$789,378 + \$267,599 = \$1,056,977$



Model & Analysis Summary

- The **relationship** of **example nightly rental price** and **occupancy rate** for short-term rental properties was modelled. (Linear Regression Line with **R-squared of 0.52**)
- With the model above, the **optimised short-term rental price** and **occupancy rate** for each of the 244 properties was calculated.
- **Net change in yearly cash flow** and **profits** during the conversion year, and every year thereafter were calculated based on the rental price and occupancy rate above.
- The metrics are based on the yearly net change in profits after conversion, with a **threshold** to determine whether a property is profitable.
- For the realistic recommendation, **Total Cashed Needed** for conversion was taken into account.

Model Assumptions & Sensitivity Analysis

Parameters	Original Assumptions for Recommendation	Assumptions for Minimum Profits	Assumptions for Maximum Profits
Additional Profit Threshold	\$6,000	\$7,000	\$5,000
Capital Expenditure per Property	\$30,000	\$36,000	\$24,000
Depreciation (years)	5	4	6
Yearly Upkeep (after conversion)	\$6,000	\$7,200	\$4,800
Transaction Fee (%)	20%	25%	15%
Regulatory Fee (%)	10%	15%	5%
Contracting Costs per Stay	\$100	\$120	\$80
Average Rental Period (nights)	3	2	4
Monthly Utilities	\$300	\$400	\$250
Net Change in Yearly Profits after Conversion if All “Profitable” Properties are Converted	\$1,127,212	\$375,677	\$2,832,254

Parameter That Affected
Profits the Most

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Service Fees to Short-term
Stay Website (e.g. Airbnb)



Conclusion

- Watershed should convert the **top 16** profitable properties with capital \$480k in the first year.
- If more than \$480k cash flow yield during the first year, Watershed should convert the **second top 16** “profitable” properties in the second year, by using the cash flow from the first year.
- Collect data and analyse continually, convert as many profitable properties into short-term rental market as possible in the future.