

CHICAGO BOOTH 

**CRSP<sup>®</sup>**

Center for Research in Security Prices

# CRSP/ZIMAN REAL ESTATE DATA SERIES

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**CHICAGO BOOTH** 

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# CHAPTER 1: OVERVIEW

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## ABOUT CRSP

The Center for Research in Security Prices (Prof. Eugene F. Fama, Chairman) has been an integral part of the academic and commercial world of financial and economic research. Since its inception in 1960, CRSP has provided an unparalleled foundation as the leading source for the most comprehensive and accurate historical US databases available. CRSP is part of the Booth School of Business of the University of Chicago, which has a history of being a catalyst for innovation and progress, and has been a resource for other academic institutions and corporations alike.

In 1959, Louis Engel, vice president of Merrill Lynch, Pierce, Fenner & Smith, called Professor James H. Lorie (PhD 1947; Professor of Business Administration) with an inquiry which resulted in a grant from Merrill Lynch and the establishment of CRSP.

The inquiry developed into a project which involved compiling, cleaning and codifying the prices, dividends and rates of return of all stocks listed and trading on the NYSE since 1926. It resulted in an academic research grade database that remains invaluable to empirical research due to its breadth, depth, and completeness, and includes CRSP's unique permanent identifiers, allowing for clean and accurate time-series research and events studies.

CRSP files continue to provide a strong foundation for economic forecasting, stock market research and financial analyses by academic institutions, investment banks, brokerage firms, corporations, banks and government agencies. CRSP provides the following data files: common stocks on the NYSE, NYSE MKT and NASDAQ; CRSP Indexes; NASDAQ, and S&P 500 composite indexes; NASDAQ and NYSE MKT Industry Indexes; US Treasury bonds; Survivor-Bias-Free Mutual Funds; market capitalization reports; proxy graphs for 10K SEC filings and custom datasets. Additionally, CRSP continues to develop new research resources such as the new CRSP/Ziman Real Estate Data Series.

## ABOUT THE RICHARD S. ZIMAN CENTER FOR REAL ESTATE

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Since its inception in 1999, the Richard S. Ziman Center for Real Estate (John S. Long, Chairman) has provided the academic and real estate communities with leading economic and demographic research regarding an industry that is rapidly evolving. The Center continues to experience success in the advancement of the quality of real estate research, in the training of highly skilled professionals, and in bridging the gap between real estate research and practice, by capitalizing on its strengths in finance, entrepreneurial studies and technology; expert faculty; superior research, forecasting and analytical tools. Its partnership with resources throughout one of the most globally renowned universities, UCLA, provides great mutual benefit, and allows the Center to succeed in redefining the real estate industry.

## DEVELOPERS OF THE CRSP/ZIMAN REAL ESTATE DATA SERIES

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**Stephen Day Cauley** is the Director of Research for the Ziman Center at The UCLA Anderson School of Management where he teaches real estate investments. His research involves the application of recent advances in economics, finance and statistics to the valuation of publicly and privately held real estate. As part of this research, he has developed innovative statistical and visualization techniques to analyze spatial variation in real estate markets. He has held academic and research positions at the UCLA Department of Economics, and at the RAND Corporation. Dr. Cauley was licensed as a real estate broker by the state of New Mexico where he was a principal of a firm that formed and managed real estate limited partnerships. Dr. Cauley earned his Ph.D. in economics from UCLA and has been a visiting scholar in finance at The Anderson School.

**Robert R. Bliss** is the F. M. Kirby Chair in Business Excellence at the Calloway School of Business and Accountancy at Wake Forest University where he teaches finance. Prior to joining the faculty at Wake Forest University Professor Bliss held positions at the Federal

Reserve Bank of Chicago, the Bank of England and the Federal Reserve Bank of Atlanta. Previously, Dr. Bliss was an Assistant Professor of Finance at Indiana University. Professor Bliss's research interests include the term structure of interest rates, interest rate derivatives, risk management, bank regulation, and the law and economics of insolvency. Professor Bliss earned his doctorate in finance from the University of Chicago. He has enjoyed a long association with Professor Fama, which includes the development of the Fama-Bliss Discount Bonds Files. His interests in database development originate in the years he spent as a senior programmer at the Center for Research in Securities Prices working on the stock and bond files.

**CRSP Management & Professional Staff:** Members of the CRSP Management & Professional Staff, from a variety of disciplines, have been intimately involved in the development of this new data series.

**Ziman Center Professional Staff:** Members of the Ziman Center Professional Staff have been intimately involved in the development of this new data series.

## CHAPTER 2: CRSP/ZIMAN REAL ESTATE DATA SERIES

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### OVERVIEW

The CRSP/Ziman Real Estate Data Series represents a collaborative effort between the Richard S. Ziman Center for Real Estate at the UCLA Anderson School of Management and The Center for Research in Security Prices at the University of Chicago. The REIT data series is a unique research resource whose development merges CRSP's experience in academic-quality financial database and index creation with the Ziman Center's expertise in real estate markets and the collection of real estate data.

Combining stock price and returns data with carefully researched information regarding the population, characteristics, and history of REITs, the CRSP/Ziman database provides firm-specific information and indexes essential to analyses involving this important asset class.

Daily and monthly indexes are computed with both equal- and value-weighting for subsets defined by type of REIT and the types of properties predominately held by equity REITs. This new database includes several qualitative measures detailing market capitalizations, concentrations, and changes in index composition particularly important for evaluating the information in thinly populated index series which were common during the 1980s.

By providing this information on all REITs that have traded on the three primary exchanges since 1980, the CRSP/Ziman Real Estate Data Series allows for time series and events studies, measurement of performance, accurate benchmarking, and in-depth analysis of the individual securities.

### CRSP/ZIMAN REAL ESTATE DATA SERIES

- Includes all REITs that have traded on the NYSE, NYSE MKT and NASDAQ exchanges since 1980
- Contains series of indexes based on all REITs and subsets of REITs based on REIT type and property type
- Contains underlying individual security information for the indexes
- Includes qualitative measures important for evaluating information in thinly populated index series
- Identifies changes in REIT status for the universe of publicly-traded REITs
- Unique Aspects:
  - ♦ Indexes:
    - Daily and monthly are available; Equal and value weighted
    - REIT and property type
    - Herfindahl-Hirschman Index & Concentration Ratios
  - ♦ Individual Securities:
    - CRSP Permanent Identifier
    - Name, price, share count, and return information
    - REIT type, property type information
    - Identification of changes in REIT status for publicly traded REIT universe
    - 450+ REITs: equity, mortgage and hybrid

### CRSP/ZIMAN UNIVERSE

The CRSP/Ziman indexes include issues identified specifically as REITs. Further specifications of REIT type and property type are used to determine membership in the appropriate indexes. The CRSP/Ziman indexes make no restrictions by exchange, share type or other categorizations.

### CRSP/ZIMAN PRICES

Daily and monthly price time series are available. Due to thinly populated target portfolios and the inconsistent trading nature of some of the securities, special rules were implemented to improve the continuity of the portfolios. To supplement trading prices and improve continuity a Used Price was assigned to the REIT for each time period. There are three categories of Used Prices assigned in the CRSP/Ziman time series:

- Good Price – an assigned valuation considered acceptable at the beginning of a period to use the security in a portfolio.

- Soft Price or Delisting Price – an assigned valuation considered acceptable as an ending price of a security already used in a portfolio, but not acceptable at the beginning of a period to use the security in the portfolio.
- Missing Price – no acceptable valuation is available, even though the security is listed on a targeted exchange and is otherwise valid for an index.

The specific types and precedence of Used Prices assigned based on time series frequency are:

### Monthly

- Good Price – month-end closing price or the month-end closing bid-ask average.
- Soft Price or Delisting Price
  - ♦ Delisting amount – if available within one month.
  - ♦ Last Good Price – the last non-missing daily price or bid/ask average within the month and within ten trading days prior to the month end.
  - ♦ Assumed Price – 0 if delisted due to bankruptcy

### Daily

- Good Price – closing price, closing bid/ask average, or the interpolated price if no price is available for a trading day but a closing price or bid/ask average is available on previous and next trading days.
- Soft Price or Delisting Price
  - ♦ Delisting Amount – if available within one month.
  - ♦ Last Good Price – price carried forward from previous day. Used on the first day of a gap over ten trading days.
  - ♦ Next Good Price – price carried back from next trading day. Used over a price gap where listing continues after gap.
  - ♦ Assumed Price – 0 if no information and delisted due to bankruptcy.

## CRSP/ZIMAN TIME SERIES

Security level time series includes price, return, shares outstanding, and adjustment factors.

- All time series are keyed by the CRSP Permanent Security Identifier, PERMNO®, and the calendar trading date. Only trading dates are included.
- Price data includes the observed price or bid/ask data as well as the used price derived for the indexes. Used prices, a price type, and the date of a used price are provided.
- Returns data includes a total return and capital appreciation based on the Used Prices.<sup>1</sup>
- Shares outstanding data is mapped from filings and adjustment events to each time series value. A capitalization is computed based on the used shares outstanding and the used price.
- Adjustment data includes the effective ordinary dividend amount, non-ordinary dividend amount, period adjustment factor, and cumulative price adjustment factor. Prices can be divided by the cumulative price adjustment factor to get prices adjusted to the basis of the last available price.

See Section 3 for the full list of variables and used price type codes.

## REIT INDEX METHODOLOGY

All REIT indexes are populated from the REITs available that fit the selection criteria of that index. Value-weighted and equal-weighted indexes are formed for each set of issues. Total return, capital appreciation, income returns, and corresponding index levels are calculated for each portfolio. The returns show the change in the total dollar value of the portfolio, over some period of time, per dollar in initial investment. The index levels show the cumulative value of the portfolio relative to a fixed starting date. All REIT index levels are set to \$100 on December 30, 1994.

The procedure for calculating each index involves three steps:

- ♦ Calculating returns for individual securities
- ♦ Calculating returns for indexes

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<sup>1</sup>In CRSP databases, returns are only based on observed prices, and delisting return is a separate field.

- ♦ Calculating index levels

### Calculating Returns for Individual Securities

Returns are calculated for each individual security using the formula:

$$r(t) = \frac{p(t)f(t) + d(t)}{p(t-1)} - 1$$

Where, for trading day  $t$ ,  $t-1$  is the previous trading day.

$r(t)$  = security's return for day  $t$

$p(t)$  = last sale or closing bid/ask for day  $t$

$f(t)$  = price adjustment factor for day  $t$

$d(t)$  = cash adjustment for day  $t$

In the total returns, dividends, split factors, spin-offs, rights and all other distributions are compensated for or reinvested on the ex-distribution date. Total Returns include all cash distributions in the cash adjustment, while Returns without Dividends exclude ordinary cash dividends. The time series used prices are inputs to the returns for the REIT indexes.

### Calculating Returns for Indexes

Returns for individual securities within an index are combined to create returns for the index. For a security to be eligible for index inclusion, Good Prices must be available for the previous period, but Good Prices, Soft Prices, or Delisting Prices can be used for the current period.

The sum of the weighted returns is divided by the sum of the securities' weights to arrive at the return for the index:

$$R(t) = \frac{\sum_n w_n(t)r_n(t)}{\sum_n w_n(t)}$$

Where, for trading day  $t$ ,  $R(t)$  is the return for the index:

$w_n(t)$  = weight of security  $n$  for day  $t$

$r_n(t)$  = security  $n$ 's return for day  $t$

Index total returns use security total returns for the securities that fit the selection criteria of that index. Price appreciation uses security returns without dividends. Income returns use the difference between the two. In an equal-weighted index, the weight of each security is one. In a value-weighted index, the weight assigned to each security is equal to its market capitalization at the end of the previous period,  $t-1$ .

### Calculating Index Levels

The base year for the CRSP/Ziman REIT Indexes is 12/30/1994<sup>2</sup>. At that point in time the indexes are set to 100.

The Index level,  $l(t)$ , is defined as:

If  $t = t_0$ ,  $l(t) = 100$

If  $t > t_0$ ,  $l(t) = l(t-1) * (1+R(t))$

If  $t < t_0$ ,  $l(t) = l(t+1)/(1+R(t+1))$

Where  $t_0$  = December 30, 1994:

$l(t)$  = index level for day  $t$

$R(t)$  = total return for the index for day  $t$

### Summary Statistics and Quality Measures

Total Value, TOTVAL, in the CRSP/Ziman REIT Indexes is defined as the total market value of the eligible issues with a Good or Soft Price at the beginning of the period<sup>3</sup>. The REIT Indexes also add new summary variables including Beginning Count, Add Count, Add Value, Drop Count, Drop Value, Observed Count, Observed Value, Concentration Ratio and the HHI - Herfindahl-Hirschman Index. See the Variable Table in Section 3 for descriptions of these variables.

<sup>2</sup>CRSP Market Indexes are set to 100 on 12/29/1972.

<sup>3</sup>CRSP Market Indexes use end of period market value calculated with observed trade or the average of observed closing bid and ask.



## CHAPTER 3: DATA DEFINITIONS

This section describes the data tables and fields available, and installation and technical file specifications.

### ALPHABETIC LISTING OF VARIABLES

The following tables contain all variables in the database, sorted by the variable code. See the Table Definitions for variables organized by the data set.

#### \* Variable Description Map

Column 1 - As defined by CRSP and available in CRSP stock databases

Column 2 - Available in both CRSP and CRSP/Ziman databases with differences in definition

Column 3 - Unique to CRSP/Ziman

VARIABLE CODE	VARIABLE NAME	DESCRIPTION	TABLE LOCATION	VARIABLE TYPE	1*	2*	3*
addcnt	Add Count	Number of Added Securities in the index. To be counted, a security must not be included in the previous period.	CRSP/ZIMAN Monthly/Daily Indexes	Integer			x
addval	Add Value	Market value of the securities identified in Add Count (above)	CRSP/ZIMAN Monthly/Daily Indexes	Real			x
aind	Index Appreciation Value	Capital Appreciation Return Index Value	CRSP/ZIMAN Monthly/Daily Indexes	Real		x	
aret	Index Appreciation Return	Capital Appreciation Return of the Index	CRSP/ZIMAN Monthly/Daily Indexes	Real	x		
begcnt	Beginning Count	Number of securities available in the index with Good or Soft Prices at the beginning of the current period. These securities may be an Unused Price at the end of the period.	CRSP/ZIMAN Monthly/Daily Indexes	Integer			x
begdt	Beginning Date (Header)	Beginning Date for header information	Header Table	Integer	x		
begdt	Beginning Date (REIT info)	REIT Information beginning date	Ziman REIT Info	Integer			x
caldt	Calendar Date	Calendar Date for which data applies	CRSP Monthly/Daily Data, CRSP/ZIMAN Monthly/Daily Indexes	Integer	x		
cap	Market Capitalization	Month End Market Capitalization calculated using Used Price and CRSP Shares Outstanding	CRSP Monthly/Daily Data	Real		x	
comnam	Company Name	Company Name	Header Table, CRSP Names	Text	x		
conratio	Concentration Ratio	Concentration Ratio is the ratio of the market value of the largest four securities in the portfolio versus the market value of the entire portfolio computed using the beginning of period market caps.	CRSP/ZIMAN Monthly/Daily Indexes	Real			x
convcd	Reserved	Reserved	CRSP Names	Text	x		
cumfp	Cumulative Price Factor	Cumulative Price Factor between period and most recent period. Divide actual price by cumulative price factor to calculate adjusted price.	CRSP Monthly/Daily Data	Real		x	
dropcnt	Drop Count	Number of Dropped Securities in the index. To be counted, a security must have been present in the index in the previous period, but not in the current period.	CRSP/ZIMAN Monthly/Daily Indexes	Integer			x
dropval	Drop Value	Market value of the securities dropped from an index in each period	CRSP/ZIMAN Monthly/Daily Indexes	Real			x

VARIABLE CODE	VARIABLE NAME	DESCRIPTION	TABLE LOCATION	VARIABLE TYPE	1*	2*	3*
enddt	End Date (Header)	Ending Date for header information	Header Table	Integer	x		
enddt	End Date (REIT info)	REIT Information ending date	Ziman REIT Info	Text			x
enddt_reason	Enddate Reason (REIT)	Reason for enddate	Ziman REIT Info	Text			x
exchcd	Exchange Code	Exchange Code: 1 = NYSE, 2 = NYSE MKT, 3 = NASDAQ, 31 = NYSE When-Issued, 32 = NYSE MKT When-Issued, 33 = NASDAQ When-Issued, 0 = Unknown, -1 = Suspended, -2 = Halted	CRSP Names	Integer	x		
facpr	Price Factor	Price factor in period. Factor used in returns formula to apply to current price to put on the same basis as previous period.	CRSP Monthly/Daily Data	Real		x	
fyrend	Fiscal Year end	Fiscal year end month	Ziman REIT Info	Integer			x
hdlstcd	Header Delisting Code	Header Delisting Code	Header Table	Integer	x		
hhi	Herfindahl Index	Herfindahl-Hirschman Index is the sum of the squares of the market share percentages of all the individual components in an index computed using beginning of period market caps.	CRSP/ZIMAN Monthly/Daily Indexes	Real			x
iind	Index Income Value	Income Return Index Value	CRSP/ZIMAN Monthly/Daily Indexes	Real		x	
index list	Index List	List of indexes for which a REIT is eligible. See Index Type Map	Ziman REIT Info	Text			x
indno	INDNO®	CRSP Index identifier code	Index Type Map, CRSP/ZIMAN Monthly/Daily Indexes	Integer		x	
iret	Index Income Return	Income Return for the Index (Dividend Yield)	CRSP/ZIMAN Monthly/Daily Indexes	Real	x		
issuercd	Reserved	Reserved	CRSP Names	Text	x		
namebegdt	Name Info Begin Date	Beginning Date for name information	CRSP Names	Integer	x		
namedesc	Reserved	Reserved	CRSP Names	Text	x		
nameenddt	Name Info End Date	Ending Date for name information	CRSP Names	Integer	x		
ndiv	Non-Ordinary Dividends	Total value of non-ordinary dividends in period	CRSP Monthly/Daily Data	Real		x	
obsCnt	Observed Count	Number of securities used in the index with a Good Price at the beginning of the current period and an Observed Price at the end of the current period.	CRSP/ZIMAN Monthly/Daily Indexes	Integer			x
obsval	Observed Value	Market value of the securities that are included in the Observed Count (obsCnt)	CRSP/ZIMAN Monthly/Daily Indexes	Real			x
odiv	Ordinary Dividends	Total Value of ordinary dividends in period	CRSP Monthly/Daily Data	Real		x	
permco	PERMCO®	CRSP Permanent Company Identifier	Header Table	Integer	x		
permno	PERMNO®	CRSP Permanent Security Identifier	Header Table, CRSP Monthly/Daily Data, CRSP Names, Ziman REIT Info	Integer	x		
prc	Price	Closing Price or Negative Bid/Ask Average on Calendar Date	CRSP Monthly/Daily Data	Real	x		
primexch	Primary Exchange	Primary Exchange Traded: N = NYSE, A = NYSE MKT, Q = NASDAQ	CRSP Names	Text	x		
psub	Property Subtype	Property subtype – See Sub Property Type file.	Ziman REIT Info	Integer			x
ptype	Property Type	Type of Property - See Property Type file	Ziman REIT Info	Integer			x
rtype	REIT Type	Type of REIT: Unknown = 0, Unclassified = 1, Equity = 2, Mortgage = 3, Hybrid = 4	Ziman REIT Info	Integer			x
secstat	Security Status	Security Status: R = Regular Way, W = When-Issued, Q = Reorganization, recapitalization, or bankruptcy	CRSP Names	Text	x		

VARIABLE CODE	VARIABLE NAME	DESCRIPTION	TABLE LOCATION	VARIABLE TYPE	1*	2*	3*
shrcd	Share Code	Share Code: First Digit: 1 = Ordinary Common shares, 3 = ADR, 4 = Shares of Beneficial Interest, 7 = Unit or Limited Partnership. Second Digit: 0 = No special status found, 1 = No special status necessary, 2 = Foreign incorporated, 4 = Closed End Fund, 8 = REIT	CRSP Names	Integer	x		
shrcls	Share Class	Share Class	CRSP Names	Text	x		
siccd	SIC Code	Standard Industrial Classification Code	CRSP Names	Integer	x		
ticker	Ticker	Ticker Symbol	CRSP Names	Text	x		
tind	Index Total Return Value	Total Return Index Value	CRSP/ZIMAN Monthly/Daily Indexes	Real		x	
totcnt	Total Count	Number of securities eligible for inclusion in the index. To be eligible, the security must be a Valid Security at the beginning of the current period, but need not have a Good Price.	CRSP/ZIMAN Monthly/Daily Indexes	Integer		x	
totval	Total Value	Market value at the time of purchase of all securities available in the index. To contribute to the total value, the security must be a Valid Security and have a Good or Soft Price at the beginning of the current period.	CRSP/ZIMAN Monthly/Daily Indexes	Real		x	
trdstat	Trading Status	Trading Status: A = Active, H = Halted, S = Suspended, X = Unknown	CRSP Names	Text	x		
tret	Index Total Return	Total Return for the Index	CRSP/ZIMAN Monthly/Daily Indexes	Real	x		
tsymbol	Ticker Symbol- primary exchange	Trading Ticker Symbol on Primary Exchange	CRSP Names	Text	x		
usdcnt	Used Count	Count of the securities used in the index. To be in an index, the security must be a Valid security and have a Good Price at the beginning of the current period and an observed or Soft Price at the end of the current period.	CRSP/ZIMAN Monthly/Daily Indexes	Integer		x	
usdprc	Used Price	Used Price - combination of various good and soft prices used in an index according to index methodology rules	CRSP Monthly/Daily Data	Real		x	
usdprcdt	Used Price Date	Date associated with the Used Price	CRSP Monthly/Daily Data	Integer		x	
usdprctype	Used Price Type	Flag used to describe the Used Price - see Price Type Table for codes.	CRSP Monthly/Daily Data	Integer			x
usdret	Used Price Total Return	Monthly Total Return based on Used Prices and Used Dates and the CRSP distribution history	CRSP Monthly/Daily Data	Real		x	
usdretx	Used Price Return (no dividends)	Monthly Return without Dividends based on Used Prices and Used Dates and the CRSP distribution history	CRSP Monthly/Daily Data	Real		x	
usdshr	Shares Outstanding	Number of Shares Outstanding	CRSP Monthly/Daily Data	Integer	x		
usdval	Used Market Value	Market value at the beginning of the current period of securities used in the index that period.	CRSP/ZIMAN Monthly/Daily Indexes	Real		x	
valid	Valid	Flag indicating a security eligibility for index membership	CRSP Monthly/Daily Data	Integer			x

### Missing Value Codes for Returns

A series of special return codes specify the reason a return is missing. Both ASCII and Access display as expected: -66.-77, and -99. For SAS there have been codes inserted for these values.

CODE	SAS	REASON FOR MISSING RETURN
-66.0	C	Valid current price but no valid previous price. Either first price, unknown exchange between current and previous price, or more than 10 periods between time t and the time of the preceding price t'.
-77.0	B	Not trading on the current exchange at time t.
-99.0	.	Missing return due to missing price at time t; usually due to suspension in trading or trading on unknown exchange.

## TABLE DEFINITIONS

In these tables variables are listed in the order they appear in datasets. Columns labeled 1, 2, and 3 headers are the same as for the Alphabetical Listing tables.

### CRSP HEADER TABLE

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
permno	PERMNO	CRSP Monthly/Daily Data, CRSP Names, Ziman REIT Info	Integer	x		
permco	PERMCO		Integer	x		
begdt	Beginning Date (Header)		Integer	x		
enddt	End Date (Header)		Integer	x		
comnam	Company Name	CRSP Names	Text	x		
hdlstcd	Header Delisting Code		Integer	x		

### CRSP NAMES TABLE

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
permno	PERMNO	CRSP Header, CRSP Monthly/Daily Data, Ziman REIT Info	Integer	x		
namebegdt	Name Info Begin Date		Integer	x		
nameenddt	Name Info End Date		Integer	x		
ticker	Ticker		Text	x		
shrcls	Share Class		Text	x		
comnam	Company Name	CRSP Header	Text	x		
exchcd	Exchange Code		Integer	x		
shrcd	Share Code		Integer	x		
siccd	SIC Code		Integer	x		
primexch	Primary Exchange		Text	x		
tsymbol	Ticker Symbol- primary exchange		Text	x		
secstat	Security Status		Text	x		
trdstat	Trading Status		Text	x		
namedesc	Reserved		Text	x		
issuercd	Reserved		Text	x		
convcd	Reserved		Text	x		

### CRSP MONTHLY/DAILY DATA

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
permno	PERMNO	CRSP Header, CRSP/ZIMAN Monthly/Daily Indexes, Ziman REIT Info	Integer	x		
caldt	Calendar Date	CRSP/ZIMAN Monthly/Daily Indexes	Integer	x		
prc	Price		Real	x		
usdprc	Used Price		Real		x	
usdprcdt	Used Price Date		Integer		x	
usdprctype	Used Price Type		Integer			x
valid	Valid		Integer			x
usdshr	Shares Outstanding		Integer		x	
cap	Market Capitalization		Real		x	
usdret	Used Price Total Return		Real		x	

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
usdretx	Used Price Return (no dividends)		Real		x	
odiv	Ordinary Dividends		Real		x	
ndiv	Non-Ordinary Dividends		Real		x	
facpr	Price Factor		Real		x	
cumfp	Cumulative Price Factor		Real		x	

### ZIMAN REIT INFO

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
permno	PERMNO	Header Table, CRSP Monthly/Daily Data, CRSP Names	Integer	x		
begdt	Beginning Date (REIT info)		Integer			x
enddt	End Date (REIT info)		Integer			x
enddt reason	Enddate Reason (REIT)		Text			x
rtype	REIT Type		Integer			x
ptype	Property Type		Integer			x
psub	Property Subtype		Integer			x
index list	Index List		Text			x
fyrend	Fiscal Year end		Integer			x

### CRSP/ZIMAN MONTHLY/DAILY INDEXES

VARIABLE CODE	VARIABLE NAME	OTHER TABLE LOCATIONS	VARIABLE TYPE	1*	2*	3*
indno	INDNO		Integer		x	
caldt	Calendar Date	CRSP Monthly/Daily Data	Integer	x		
tret	Index Total Return		Real	x		
tind	Index Total Return Value		Real		x	
aret	Index Appreciation Return		Real	x		
aind	Index Appreciation Value		Real		x	
iret	Index Income Return		Real	x		
iind	Index Income Value		Real		x	
usdcnt	Used Count		Integer		x	
usdval	Used Market Value		Real		x	
totcnt	Total Count		Integer		x	
totval	Total Value		Real		x	
addcnt	Add Count		Integer			x
addval	Add Value		Real			x
dropcnt	Drop Count		Integer			x
dropval	Drop Value		Real			x
obs cnt	Observed Count		Integer			x
obsval	Observed Value		Real			x
begcnt	Beginning Count		Integer			x
hhi	Herfindahl Hirschman Index		Real			x
conratio	Concentration Ratio		Real			x

## TYPE TABLE DEFINITIONS

The following five tables contain type and index definitions used in the CRSP-ZIMAN indexes and their definitions. A data set is provided for each type. The column headers in the tables below describe the data items in these data sets.

### PROPERTY TYPE

PROPERTY TYPE	LONG DESCRIPTION	SHORT DESCRIPTION
0	Unknown	Unknown
1	Unclassified	Unclassified
2	Diversified	Diversified
3	Health Care	Health Care
4	Industrial/Office	Industrial/Office
5	Lodging/Resorts	Lodging/Resorts
6	Mortgage	Mortgage
7	Mortgage Backed Securities	Mortgage Backed Securities
8	Residential	Residential
9	Retail	Retail
10	Self Storage	Self Storage

### REIT TYPE

REIT TYPE	LONG DESCRIPTION	SHORT DESCRIPTION
0	Unknown	Unknown
1	Unclassified	Unclassified
2	Equity	Equity
3	Mortgage	Mortgage
4	Hybrid	Hybrid

### SUB-PROPERTY TYPE

SUB-PROPERTY TYPE	LONG DESCRIPTION	SHORT DESCRIPTION
0	Unknown	Unknown
1	Unclassified	Unclassified
2	Apartments	Apartments
3	Commercial Financing	Commercial Financing
4	Diversified	Diversified
5	Freestanding	Freestanding
6	Health Care	Health Care
7	Home Financing	Home Financing
8	Industrial	Industrial
9	Lodging/Resorts	Lodging/Resorts
10	Manufactured Homes	Manufactured Homes
11	Mixed	Mixed
12	Mortgage Backed Securities	Mortgage Backed Secu
13	Office	Office



INDEX TYPE POSITION	LONG DESCRIPTION	SHORT DESCRIPTION	INDNO	RTYPE MASK	PTYPE MASK	PSUB MASK
5	CRSP Ziman Unclassified Ptype REIT Value Weighted Index	Unclas'd Ptyp REIT VW Ind	1000804	00111	01000000000000000000	111111111111111111111111
6	CRSP Ziman Diversified Ptype REIT Value Weighted Index	Div'd Ptype REIT VW Index	1000805	00111	00100000000000000000	111111111111111111111111
7	CRSP Ziman Health Care Ptype REIT Value Weighted Index	Health Care Ptyp VW Index	1000806	00111	00010000000000000000	111111111111111111111111
8	CRSP Ziman Industrial/Office Ptype REIT Value Weighted Index	Indstrl/Offc Ptyp VW Indx	1000807	00111	00001000000000000000	111111111111111111111111
9	CRSP Ziman Lodging/Resorts Ptype REIT Value Weighted Index	Lodg/Resort Ptyp VW Index	1000808	00111	00000100000000000000	111111111111111111111111
10	CRSP Ziman Residential Ptype REIT Value Weighted Index	Residnt'l Ptype VW Indx	1000811	00111	00000000100000000000	111111111111111111111111
11	CRSP Ziman Retail Ptype REIT Value Weighted Index	Retail Ptype VW Index	1000812	00111	00000000010000000000	111111111111111111111111
12	CRSP Ziman Self Storage Ptype REIT Value Weighted Index	Self Strg Ptype VW Index	1000813	00111	00000000001000000000	111111111111111111111111
13	CRSP Ziman REIT Equal Weighted Index	CRSP Ziman REIT EW Index	1000850	00111	1111111111111111111111	111111111111111111111111
14	CRSP Ziman Equity REIT Equal Weighted Index	Equity REIT EW Index	1000851	00100	1111111111111111111111	111111111111111111111111
15	CRSP Ziman Mortgage REIT Equal Weighted Index	Mortgage REIT EW Index	1000852	00010	1111111111111111111111	111111111111111111111111
16	CRSP Ziman Hybrid REIT Equal Weighted Index	Hybrid REIT EW Index	1000853	00001	1111111111111111111111	111111111111111111111111
17	CRSP Ziman Unclassified Ptype REIT Equal Weighted Index	Unclas'd Ptyp REIT EW Ind	1000854	00111	01000000000000000000	111111111111111111111111
18	CRSP Ziman Diversified Ptype REIT Equal Weighted Index	Div'd Ptype REIT EW Index	1000855	00111	00100000000000000000	111111111111111111111111
19	CRSP Ziman Health Care Ptype REIT Equal Weighted Index	Health Care Ptyp EW Index	1000856	00111	00010000000000000000	111111111111111111111111
20	CRSP Ziman Industrial/Office Ptype REIT Equal Weighted Index	Indstrl/Offc Ptyp EW Indx	1000857	00111	00001000000000000000	111111111111111111111111
21	CRSP Ziman Lodging/Resorts Ptype REIT Equal Weighted Index	Lodg/Resort Ptyp EW Index	1000858	00111	00000100000000000000	111111111111111111111111
22	CRSP Ziman Residential Ptype REIT Equal Weighted Index	Residnt'l Ptype EW Indx	1000861	00111	00000000100000000000	111111111111111111111111
23	CRSP Ziman Retail Ptype REIT Equal Weighted Index	Retail Ptype EW Index	1000862	00111	00000000010000000000	111111111111111111111111
24	CRSP Ziman Self Storage Ptype REIT Equal Weighted Index	Self Strg Ptype EW Index	1000863	00111	00000000001000000000	111111111111111111111111



# CHAPTER 4: TECHNICAL SPECIFICATIONS

## INSTALLATION

To access the data on the CD, insert the CD into your computer and start the setup wizard. The data series is available in three different formats: Microsoft Access, SAS, and ASCII. Select the format(s) to install and follow the directions of the wizard to install the data. The installation procedure allows the load of one or more of the three formats to a local disk. Select a top level folder and data for the selected formats will appear in subfolders.

## FILE LAYOUTS

The contents of each format for daily and monthly subscribers appear below. Monthly-only subscribers will not receive the daily index and security data files or tables.

## ASCII

All files contain variable-width records, ending with line-feeds, with fields pipe-delimited. There are no header records. See Table Definitions in Chapter 3 for field order in each file.

FILE NAME	DESCRIPTION
crsp_daily_data.txt*	daily REIT security data
crsp_header.txt	security REIT header data
crsp_monthly_data.txt	monthly REIT security data
crsp_names.txt	security name history of REITS
crsp_ziman_daily_index.txt*	daily index results
crsp_ziman_monthly_index.txt	monthly index results
index_type_map.txt	definitions of available indexes and their composition
price_type.txt	definitions of available price types
property_type.txt	definitions of available REIT property types
reit_type.txt	definitions of available REIT categories
sub_property_type.txt	definitions of available REIT property subtypes
ziman_reit_info.txt	REIT information

\* present in Daily/Monthly product only

## SAS

Column names and labels are embedded in the data sets. The full descriptions for fields can be found in the table definitions section of Chapter 3.

FILE NAME	DESCRIPTION
crsp_daily_data.sas7bdat*	daily REIT security data and index
crsp_daily_data.sas7bndx*	
crsp_header.sas7bdat	security REIT header data and index
crsp_header.sas7bndx	
crsp_monthly_data.sas7bdat	monthly REIT security data and index
crsp_monthly_data.sas7bndx	
crsp_names.sas7bdat	security name history of REITS and index
crsp_names.sas7bndx	
crsp_ziman_daily_index.sas7bdat*	daily index results and index
crsp_ziman_daily_index.sas7bndx*	
crsp_ziman_monthly_index.sas7bdat	monthly index results and index
crsp_ziman_monthly_index.sas7bndx	
index_type_map.sas7bdat	definitions of available indexes and their composition
price_type.sas7bdat	definitions of available price types
property_type.sas7bdat	definitions of available REIT property types
reit_type.sas7bdat	definitions of available REIT categories
sub_property_type.sas7bdat	definitions of available REIT property subtypes
ziman_reit_info.sas7bdat	REIT information and index
ziman_reit_info.sas7bndx	

\* present in Daily/Monthly product only

## MSACCESS

One Microsoft Access database is provided named **reit\_db.mdb** containing all data tables. Databases are in Access 2000 file format. The design view menu within Access can be used to view available fields, data types, and descriptions.